

PROPERTY TAX ASSESSMENT INCENTIVE MODEL FOR GREEN BUILDING INITIATIVE IN MALAYSIA

SHAZMIN SHAREENA BT. AB. AZIS

A thesis submitted in fulfilment of the
requirements for the award of the degree of
Doctor of Philosophy (Real Estate)

Faculty of Geoinformation and Real Estate
Universiti Teknologi Malaysia

FEBRUARY 2017

Thankful to

Allah the Almighty for the blessing and guidance

Husband and kids for the endless love and supports

ACKNOWLEDGEMENT

Alhamdulillah because of Allah willingness and blessing, I have completed this thesis. In full gratitude, I would like to acknowledge individuals, who have encouraged, inspired, supported, and assisted until the end of this meaningful and significant journey.

First and foremost, I would like to express my highest gratitude to my supervisor, Associate Prof. Dr. Ibrahim Sipan and my co-supervisor Associate Prof. Dr. Maimunah Sapri for the guidance, concern and persistent help throughout this journey. Thank you for giving me this meaningful opportunities and experiences in completing this thesis. Also, to Universiti Teknologi Malaysia (UTM) indeed has been a very pleasant and inspiring learning environment.

I also would like to thank all individuals and organizations that involved directly or indirectly in this study throughout these years. Thank you very much.

ABSTRACT

The practice of providing property tax assessment incentives for green buildings has been proven to encourage the growth of green building practices at a local level. However, the property tax assessment incentive available for green buildings in Malaysia is developed without property tax assessment basis and requires large financial expenditure from the local authority. Therefore, this scenario exhibits the incentive only relevant for local authority with strong financial budget. As a result it creates an issue for those unwilling nor do they have large financial budget to spend on the incentive program. This study aims to address the issue by developing a model of property tax assessment incentive based on improved value excluding financial expenditure from the local authority. There are three objectives outlined in this study: 1) to determine green envelope components of green building certified under Malaysian Green Building Index (GBI) rating tool; 2) to analyse the effect of the determined green envelope component on property value; and 3) to develop and validate property tax assessment incentive models for green building. The GBI certified green envelope components were determined through integrating the green benefits of identified green envelope components with GBI green criteria using meta-analysis. The sampling focuses on Malaysian property valuation practitioners with green building valuation experiences. This study comprises quantitative data involving questionnaire survey to 550 property valuation practitioners in Malaysia. The collected data were analysed using frequency analysis. The Cost-Benefits analysis between property tax assessment increment and annual energy saving conveyed by green envelope components on building was conducted to determine the appropriate baseline for percentage of reduction for the proposed incentive models. The developed models were validated through semi-structured interview with the Director of Valuation Department at Kulai Municipal Council. The findings demonstrate that out of ten green envelope components affecting property value, three green envelope components were found to increase property value, namely: solar photovoltaic, green roof and green living wall. Two property tax assessment incentive models developed are: 1) exemption model and 2) reduction model. The results indicate that the reduction baseline for solar photovoltaic, green roof and green living starts from 25%, 0% and 0% respectively. Kulai Municipal Council is willing to provide 50% reduction for each green envelope component.

Through a proposed exemption model, the local authority and taxpayer do not experience any changes on their existing tax. However, through a reduction model, the local authority does experience around RM 18 to RM 40 minimum tax increment on their existing tax revenue. Meanwhile, for the taxpayer, the annual energy saving conveyed by the green envelope components is able to compensate the amount of tax increment.

ABSTRAK

Praktis pemberian insentif penilaian cukai harta tanah untuk bangunan hijau terbukti berkesan dalam menggalakkan pertumbuhan bangunan hijau di peringkat tempatan. Walau bagaimanapun, insentif penilaian cukai harta di Malaysia dibangunkan tanpa asas percukaian harta tanah dan memerlukan perbelanjaan kewangan yang besar dari pihak berkuasa tempatan. Oleh itu, senario ini menunjukkan insentif ini hanya sesuai untuk pihak berkuasa tempatan yang mempunyai bajet kewangan yang besar dan ini menimbulkan isu kepada pihak berkuasa tempatan yang tidak bersedia dan tidak mempunyai bajet kewangan untuk dibelanjakan ke atas program insentif ini. Matlamat kajian ini adalah untuk mengatasi isu ini dengan membangunkan model insentif cukai harta berasaskan nilai tambah tanpa memerlukan perbelanjaan kewangan daripada pihak berkuasa tempatan. Tiga objektif digariskan iaitu: 1) mengenalpasti komponen hijau bangunan yang diiktiraf indek bangunan hijau Malaysia (GBI); 2) menganalisa kesan komponen bangunan hijau ke atas nilai harta tanah; dan 3) membangunkan dan mengesahkan model insentif penilaian cukai harta tanah bangunan hijau. Komponen bangunan hijau yang diiktiraf GBI dikenalpasti dengan mengintegrasikan faedah hijau komponen dengan kriteria hijau GBI menggunakan meta-analisis. Sampel kajian ini menumpukan kepada pengamal penilai harta tanah di Malaysia yang berpengalaman menilai bangunan hijau. Kajian ini melibatkan data kuantitatif iaitu pengagihan kajian soal selidik kepada 550 pengamal penilai harta tanah di Malaysia. Data dianalisis menggunakan analisis kekerapan. Analisis Kos-Faedah dilakukan ke atas jumlah kenaikan penilaian cukai harta dan penjimatan tenaga tahunan oleh komponen hijau bangunan bagi tujuan mendapatkan garis asas bagi peratusan pengurangan untuk insentif model yang akan dibangunkan. Model yang dibangunkan disahkan melalui temubual separa berstruktur dengan Pengarah Jabatan Penilaian di Majlis Perbandaran Kulai. Keputusan menunjukkan daripada sepuluh komponen bangunan hijau yang mempengaruhi nilai, terdapat tiga komponen yang meningkatkan nilai harta tanah iaitu solar photovoltaic, bumbung tumbuhan hijau, dan dinding tumbuhan hijau. Dua jenis model insentif penilaian cukai harta telah dibangunkan iaitu: 1) model pengecualian dan 2) model pengurangan. Keputusan menunjukkan garis asas bagi peratusan pengurangan untuk solar photovoltaic, bumbung tumbuhan hijau, dan dinding tumbuhan hijau bermula dari 25%, 0% dan 0% masing-masing. Majlis Perbandaran Kulai bersedia memberikan 50% pengurangan bagi setiap komponen hijau bangunan. Melalui model pengecualian, pihak berkuasa tempatan dan pembayar cukai tidak akan mengalami sebarang

perubahan terhadap cukai sedia ada. Manakala melalui model pengurangan, pihak berkuasa tempatan akan mengalami kenaikan minimum hasil cukai harta dalam lingkungan RM 18 hingga RM 40. Walau bagaimanapun, untuk pembayar cukai, kenaikan cukai harta mampu ditimbal balik oleh penjimatan tenaga tahunan dari komponen hijau bangunan tersebut.

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	DECLARATION	ii
	DEDICATION	iii
	ACKNOWLEDGEMENTS	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENTS	vii
	LIST OF TABLES	xvi
	LIST OF FIGURES	xx
	LIST OF APPENDICES	xxiv
1	INTRODUCTION	1
	1.1 Research Background	1
	1.2 Research Issues	3
	1.3 Research Questions	6
	1.4 Research Aim	6
	1.5 Research Objectives	6
	1.6 Research Scope	7
	1.6.1 Retrofitted Green Building	7

1.6.2	Green envelope components	8
1.6.3	Research Area	9
1.6.4	Property Type	10
1.7	Research Significances	11
1.8	Chapter Organizations	12
2	PROPERTY TAX ASSESSMENT, GREEN BUILDING, AND PROPERTY TAX ASSESSMENT INCENTIVE	14
2.1	Introduction	14
2.2	Property Tax Assessment	15
2.2.1	Criteria of Efficient Taxation System	16
2.2.1.1	Equity	16
2.2.1.2	Certainty	17
2.2.1.3	Simplicity	18
2.2.1.4	Neutrality	18
2.2.1.5	Efficiency	18
2.2.2	Principle of Property Tax Assessment	19
2.2.3	Bases of Property Tax Assessment	20
2.2.3.1	Property Tax Assessment Based on Improved Value	21
2.2.4	Fixtures and Chattels	24
2.2.4.1	Fixtures	24
2.2.4.1.1	Degree of Annexation	24
2.2.4.1.2	Purpose of Annexation	25
2.2.4.2	Chattels	26
2.3	Green Building	27
2.3.1	Green Building Assessment Tools	29
2.3.2	Green Building Index (GBI), Malaysia	32
2.4	Property Tax Assessment Incentives on Green Building	38
2.4.1	Spain	39

2.4.2	Romania	41
2.4.3	Bulgaria	41
2.4.4	Italy	42
2.4.5	Canada	43
2.4.6	United State	43
2.4.7	India	46
2.4.8	Malaysia	47
2.5	Bases of Property Tax Assessment Incentive Models on Green Building	50
2.6	Property Tax Assessment Incentive Encourage Green Building Development	54
2.7	Summary	56
3	LITERATURES ON GREEN BUILDING VALUE	57
3.1	Introduction	57
3.2	Relation between Green Building and Value	57
3.3	Effect of Green Building Components on Green Building Value	60
3.3.1	Benefit-Cost Analysis	61
3.3.2	Hedonic Price Regression	65
3.4	Green Envelope Components and Property Value	72
3.5	Summary	75
4	GREEN ENVELOPE COMPONENTS AND GREEN BUILDING INDEX CRITERIA	76
4.1	Introduction	76
4.2	Green Envelope Components	76
4.3	Green Envelope Components on Roof Area	78
4.3.1	Solar Photovoltaic	79
4.3.1.1	Solar Photovoltaic Based on Green Building Index (GBI) Criteria	82
4.3.2	Solar Water Heating	84

4.3.2.1	Flat-Plate Solar Collector	85
4.3.2.2	Evacuated Tube Solar Collector	86
4.3.2.3	Solar Water Heating Based on Green Building Index (GBI) Criteria	87
4.3.3	Light Pipe	89
4.3.3.1	Types of Light Pipe	90
4.3.3.2	Light Pipe Based on Green Building Index (GBI) Criteria	91
4.3.4	Roof Skylight	92
4.3.4.1	Roof Skylight Based on Green Building Index (GBI) Criteria	94
4.3.5	Turbine Ventilator	96
4.3.5.1	Turbine Ventilator Based on Green Building Index (GBI) Criteria	99
4.3.6	Green Roof	100
4.3.6.1	Green Roof Based on Green Building Index (GBI) Criteria	102
4.4	Green Envelope Components on Wall including Window Area	104
4.4.1	Green Living Wall	104
4.4.1.1	Green Living Wall Based on Green Building Index (GBI) Criteria	109
4.4.2	Double Skin Façade Glazing	110
4.4.2.1	Double Skin Facade Based on Green Building Index (GBI) Criteria	114
4.4.3	Light Shelf	116
4.4.3.1	Light Shelf Based on Green Building Index (GBI) Criteria	118

4.4.4	Window External Shading	119
4.4.4.1	Window External Shading on Green Building Index (GBI) Criteria	121
4.6	Summary	124
5	RESEARCH METHODOLOGY	125
5.1	Introduction	125
5.2	Research Methodology	126
5.3	Research Process	128
5.3.1	Stage One	128
5.3.2	Stage Two	129
5.3.3	Stage Three	130
5.3.4	Stage Four	131
5.3.5	Stage Five	132
5.4	Methodology of Objective Achievement	134
5.4.1	First Objective: Green Envelope Component of Green Building	134
5.4.2	Second Objective: Effect of Green Envelope Components on Property Value	137
5.4.2.1	Data collection	137
5.4.2.2	Respondent Sampling	138
5.4.2.3	Sampling Size	141
5.4.2.4	Reliability Test	144
5.4.2.5	Annual Energy Saving of Green Envelope Components that Increased Property Value	145
5.4.3	Third Objective: The Development of Property Tax Assessment Incentive Model on Green Building	147
5.4.3.1	Model development	151
5.4.3.2	Model validation	152
5.5	Summary	153

6	THE EFFECT OF GREEN ENVELOPE COMPONENTS ON PROPERTY VALUE	154
6.1	Introduction	154
6.2	Green Envelope Components Effect on Property Value	155
6.2.1	Green Envelope Components that Increase Property Value	158
6.2.2	Green Envelope Components that have No Effect on Property Value	159
6.3	Annual Energy Saving of Green Envelope Components: Increase Property Value	161
6.3.1	Energy Saving Conveyed by Solar Photovoltaic	162
6.3.2	Energy Saving Conveyed by Green Roof	167
6.3.3	Energy Saving Conveyed by Green Living Wall	170
6.3.4	Summary of Annual Energy Saving by Solar Photovoltaic, Green Roof, and Green Living Wall	174
6.3.5	Annual Electricity Bill Saving by Solar Photovoltaic, Green Roof, and Green Living Wall	176
6.3.5.1	Average Electricity Tariff for Residential Building	177
6.3.5.2	Average Annual Electricity Consumption for Residential in Kulai	178
6.4	Summary	182
7	PROPERTY TAX ASSESSMENT INCENTIVES MODEL FOR GREEN BUILDING	184
7.1	Introduction	184
7.2	Incentive Model based on Improved Value	185

7.2.1	Solar Photovoltaic Costing	186
7.2.2	Green Roof Costing	187
7.2.3	Green Living Wall Costing	188
7.2.4	Minimum Cost for Solar Photovoltaic, Green Roof, and Green Living Wall Based on Tone of the list Year 2008	192
7.3	Minimum Tax Increment on Solar Photovoltaic, Green Roof, and Green Living Wall	196
7.3.1	Tax Increment for Solar Photovoltaic	199
7.3.2	Tax Increment for Green Roof	199
7.3.3	Tax Increment for Green Living Wall	200
7.4	Property Tax Assessment Incentive Model for Green Building	202
7.4.1	Property Tax Assessment Incentive: Exemption Model	202
7.4.1.1	Effect Local Authority Tax Revenue	205
7.4.1.2	Effect on Taxpayer	206
7.4.2	Property Tax Assessment Incentive: Reduction Model	207
7.4.2.1	Percentage of Reduction	209
7.4.2.1.1	Cost-Benefit Analysis Based on Overall Green Envelope Components	210
7.4.2.1.2	Cost-Benefit Analysis Based on Individual Green Envelope Components	212
7.4.2.1.2.1	Effect	215

	on	
	Local	
	Autho	
	rity	
	Tax	
	Reven	
	ue	
	7.4.2.1.2.2 Effect	
	on	
	Taxpa	
	yer	220
7.5	Property Tax Assessment Incentive Models	
	Validation	224
7.5.1	Model Validation for Solar Photovoltaic	
	on Single Storey Terrace House in Kulai	225
7.5.1.1	Validation of Property Tax	
	Assessment Exemption Model	227
7.5.1.2	Validation of Property Tax	
	Assessment Reduction Model	228
7.5.2	Model Validation for Green Roof and	
	Green Living Wall Using Prototype 3D	
	Single Storey Terrace House	229
7.5.2.1	Validation of Property Tax	
	Assessment Exemption Model	230
7.5.2.2	Validation of Property Tax	
	Assessment Reduction Model	231
7.6	Summary	233
8	FINDINGS, CONCLUSIONS AND	
	RECOMMENDATIONS	234
8.1	Introduction	234
8.2	Research Findings	235
8.2.1	Green Envelope Components Certified	236

	under GBI	
8.2.2	The Effect of Green Envelope Component on Property Value	236
8.2.3	Property Tax Assessment Incentive Model Development for Green Building	237
8.3	Research Contributions	239
8.4	Research Limitations	240
8.5	Recommendations for Future Research	242
8.6	Summary	242
REFERENCES		244
Appendices A-B		277-287

LIST OF TABLES

TABLE NO.	TITLE	PAGE
2.1	Purpose of property tax assessment on property	15
2.2	Prominent green building assessment tools	31
2.3	Function of Green Building Index assessment tool	32
2.4	Summary of Green Building Index (GBI) Malaysia	33
2.5	Green Building Index Assessment level	34
2.6	Green Building Index (GBI) Malaysia green main criteria, sub-criteria and assessment points for residential new construction.	35
2.7	Percentage of property tax assessment rebates in the United States	45
2.8	Summary on types of incentive models and bases adopted by several countries	49
3.1	Publications on analysis method for green components value	61
3.2	Benefit–Cost analysis on green components	63
3.3	Green envelope components value based on hedonic regression approach	70

4.1	GBI assessment criteria for solar photovoltaic system	84
4.2	Comparison between flat panel solar collectors and evacuated tube solar collectors	87
4.3	GBI assessment criteria for solar water heating	88
4.4	GBI assessment criteria for light pipe	92
4.5	Maximum percentage of roof skylight area as suggested in Malaysia Standard MS 1525 (2007)	94
4.6	GBI assessment criteria for roof skylight	95
4.7	GBI assessment criteria for turbine ventilator	99
4.8	Description on extensive and intensive types of green roofs	101
4.9	GBI assessment criteria for green roof	104
4.10	Details on green façade and living wall	107
4.11	GBI assessment criteria for green living wall	110
4.12	Type of double skin façade	112
4.13	GBI assessment criteria for double skin facade	115
4.14	GBI assessment criteria for light shelf	119
4.15	GBI assessment criteria for window external shading	122
4.16	Green benefits of green envelope components	123
5.1	Research objective and methodology	127
5.2	Rule of thumb for reliability test of Cronbach alpha coefficient (α)	145
5.3	Building cost based on tone of the list 2008	149
6.1	Reliability test result	154
6.2	Frequency analysis result on the effect of green envelope components on property value	155
6.3	Feed in Tariff rates for residential solar photovoltaic in Malaysia in January 2015	164
6.4	The details of green wall configurations as compared by Wong <i>et al.</i> (2010)	172
6.5	Annual energy saving of green envelope	175

	components that increased property value based on published studies	
6.6	Malaysia electricity tariff for residential building year 2014/2015 by Tenaga Nasional Berhad (TNB)	177
6.7	Average annual electricity consumption for residential in Kulai	178
6.8	Minimum annual electricity saving conveyed by green building components for residential in Kulai	179
6.9	Projection of increase in electricity demand for residential in Kulai	179
6.10	Annual saving in electricity bills conveyed by green envelope components	180
6.11	Summary of annual electricity bills conveyed by green envelope components	181
7.1	Green envelope components cost year 2015	188
7.2	Building costing 2015 for terrace houses in Johor Bahru by Langdon and Seah (2015)	190
7.3	Green envelope components cost year 2008 based on time factor adjustment	191
7.4	Minimum built up, roof and external facade area for landed residential property in Kulai	192
7.5	Total minimum cost of green envelope components based on year 2008	195
7.6	Minimum cost and tax increment in property tax assessment of green building	200
7.7	Minimum tax increment in property tax assessment of green building	204
7.8	Tax increment after 100% exemption on of green envelope components	205
7.9	Taxpayer profit due to annual energy saving and tax increment	207
7.10	Overall cost-benefit ratio of green envelope	211

	components	
7.11	Cost-benefit analysis of tax increment and annual electricity saving on individual green envelope components	214
7.12	Baseline for percentage of reduction based on individual cost-benefits analysis	215
7.13	Effect of percentage of reduction on local authority existing tax revenue	216
7.14	Total tax revenue increment for the local authority	218
7.15	Taxpayer profit after tax increment	221
7.16	Total tax increment imposed on taxpayer	222
7.17	Total taxpayer profit from annual electricity saving after tax increment (RM)	223

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
2.1	Property tax assessment bases in Malaysia	20
2.2	Countries adopting property tax assessment incentive on green building based on world continents	39
2.3	Type of Tax Incentives Offered by United States Government for Green Building	44
2.4	Property tax assessment incentive models for green building, sorted by countries	50
2.5	The bases of property tax assessment incentive models on green building	53
3.1	Green Envelope Components affect property value	74
4.1	Schematic diagram of solar photovoltaic system in generate electricity from solar energy	79
4.2	The components of solar photovoltaic system	81
4.3	Solar photovoltaic application on the retrofitted roof area of residential building	82
4.4	Solar water heating application on the retrofitted	85

	roof area of residential building	
4.5	Type of solar water heating panels (a) Flat-plate solar collector and (b) Evacuated tube solar collector	87
4.6	Schematic diagram of light pipe configuration	89
4.7	Schematic diagram of light pipe system (a) straight light pipe, (b) bend light pipe	90
4.8	Light pipe application on the retrofitted roof area of residential building	91
4.9	Roof skylight application on the retrofitted roof area of residential building from external and internal view	94
4.10	Type of rooftop turbine ventilators	98
4.11	Turbine ventilator application on the retrofitted roof area of residential building	98
4.12	Schematic representation of extensive and intensive green roof configuration	100
4.13	Green roof application on the retrofitted roof area of residential building	102
4.14	(a) Direct green façade; (b) Indirect green façade; (c) Indirect green façade with planter box; (d) Green living wall	105
4.15	Green living wall application on the retrofitted external wall area of residential building	108
4.16	Schematic configuration of green living wall attachment on building facade	108
4.17	Double skin facade application on the retrofitted external wall area of building	112
4.18	Type of double skin façade on building. a) Box window façade, b) Shaft box façade, c) Corridor façade, and d) Multi storey façade	113
4.19	Schematic configuration of double skin façade on building facade	114

4.20	Light shelf application on the retrofitted external wall area of residential building	117
4.21	Schematic configuration of light shelf on building facade	118
4.22	Window external shading application on the retrofitted wall of residential building	120
4.23	Type of window external shading	121
5.1	Research process	133
5.2	Process to verify green envelope components are certified under GBI green building assessment tool	136
5.3	Diagram of the effect of green envelope components on property value	138
5.4	Respondents sampling: Population size	140
5.5	Respondents sampling: Sample selection	141
5.6	Methodology to determine saving in annual electricity bill for each green envelope components	146
5.7	Framework for property tax assessment incentive model development	150
5.8	Compensation basis for increased amount of property tax assessment on green building	152
6.1	Overall effect of green envelope components on property value	156
6.2	Findings on the effect of green envelope components on property value	157
6.3	Green envelope components that increased property value	158
6.4	Green envelope components that have no effect on property value	160
6.5	Minimum and maximum annual energy saving conveyed by green envelope components that	176

	increased property value	
6.6	Annual electricity bills conveyed by green envelope components	182
7.1	Value of property transected and percentage change from 2008 until 2014	190
7.2	Floor plan of single storey terrace house floor area at 1000sqft in Kulai	193
7.3	Minimum cost of green envelope components that increased property value	196
7.4	Minimum tax increment in property tax assessment of green building	201
7.5	Comparison between tax increment and annual saving in electricity bills of green envelope components	212
7.6	The revenue increment based on percentage of reduction	219
7.7	The amount of taxpayer profit after tax increment based on percentage of reduction	224
7.8	Subject property front view	225
7.9	Subject property is single storey terrace type of house	226
7.10	Subject property retrofitted with 4 kilowatt solar photovoltaic at the rooftop area	226
7.11	Side view prototype 3D model of single storey terrace house integrated with green roof and green living wall in Taman Indahpura, Kulai, Johor	230

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
A	Questionnaires for property valuation practitioner in Malaysia	282
B	Application form of property tax assessment on green building by Petaling Jaya City Council	286

CHAPTER 1

INTRODUCTION

1.1 Research Background

The involvement of governments in promoting green building is regarded as one of the undeniable effective ways (Varone and Aebischer, 2000; Qian and Chan, 2008; Sinton *et al.*, 2005; Liang *et al.*, 2007). Green building is defined by Urban Land Institute (2005) as a practice of increasing the building efficiency with the building uses resources while at the same time it reduces the building impact on human health and the environment during the building's lifecycle. This goal is realized through better siting, design, construction, operation, maintenance and removal of building respectively.

In May 2015, the Government of Malaysia has listed green growth as one of the agenda in 11th Malaysian Plan. Besides, the Federal Department of Town and Country Planning Peninsular Malaysia under the Ministry of Urban Wellbeing, Housing and Local Government has prescribed under the Housing Planning Guideline (2011), one of the elements registered under the direction of Malaysia housing development is the residential building construction shall have quality, innovation and construction with green building concept and technology. This

guideline indicates that the government of Malaysia is determined in moving Malaysian housing sector towards green building implementation.

Moreover, the initiation of Green Building Index (GBI) as green assessment tool by the Malaysian Institute of Architects (PAM) and Association of Consulting Engineers of Malaysia (ACEM) Malaysia in 2009 has also demonstrates that Malaysia is committed in supporting green building development. Green assessment tool is purposely developed to provide guideline for developers and building owners to design and construct green buildings that meet green criteria in order to reduce the building impact on the environment (Green Building Index, 2009).

Since the Earth Summit in 1992, the government has acknowledged among the key players instrumental in the implementation of sustainable development concepts is the local authority (Fowke and Prasad, 1996). According to Theaker and Cole (2001), local authority is the best place for green policies and incentives to be developed since they have the organizational structures that enforce the development regulations. Besides, the local authority is in the best position to respond to the local level conditions and issues, because sustainability activities are more meaningful and effective at the local level (Theaker and Cole, 2001). Moreover, according to the speech made by the sixth Malaysia's Prime Minister at the United Nations Climate Change Conference 2009 in Copenhagen, Denmark that Malaysia has volunteered to reduce carbon emissions at up to 40% in comparison with the carbon emission level in 2005 by the year of 2020.

Local authority is a non-profit agency whose functions are to provide services to the society, to control and regulate town planning and to approve applications for planning permission, development and renovation of premises (Town and Country Planning Act 1976, Act 172). The development of green building has various benefits including, develop positive image, increase property tax revenue, increase productivity, decrease worker absenteeism, reduce pollution and natural disaster, and

opportunity to create job field. Moreover, according to several researches, green building development reduces the cost borne by the local authority in order to serve the public needs in terms of the service, maintenance, facility and infrastructure (Turcotte et al., 2006; Guidry, 2004; Romm and Browning, 1998; Kats, 2010; Ibrahim et al., 2014).

Property tax assessment is a compulsory tax collected by local authority from taxpayer. Every property except for few special properties within the local authority administration area is imposed with property tax assessment (Ariffian and Hasmah, 2001). The purpose of the imposition of property tax assessment on property is related to the role of the local authority to serve the social need of the society by providing service, maintenance, basic facility and infrastructure for the public (Mani, 1988; Pawi et al., 2011).

Based on literatures, there are two categories of incentive provided by the local authority as an initiative for green building development specifically; financial incentives and structural incentives (Ibrahim et al., 2014; Commercial Real Estate Development Association, 2007; American Institute of Architect, 2012). Financial incentive relates to monetary support as such property tax assessment, grants and development fees. Meanwhile, structural incentive is inclined to technical supports, such as marketing, technical assistance, expedited permit processing, and density bonus.

1.2 Research Issues

Several Commonwealth countries around the globe which adopted improved value and annual value including Spain, Romania, Italy, Bulgaria, United States, Canada, and India have widely provided property tax assessment incentive as an

initiative to encourage green building development at local level. There are three types of property tax incentives available for green building specifically; reduction, exemption, and rebate. The practice of providing these incentives within the green building has been empirically documented to encourage the growth of green building at local level. However, Shazmin et al. (2013) have reported that there are no uniformity and definite basis adopted to develop this incentive. It was verified by Green Building Certification Institute in Washington, DC and North Carolina State University that these incentives were provided depending on the preferences of each local municipal (Shazmin et al., 2013). Furthermore, these incentives were developed appropriate with each country's green rating tool. There are four identified bases adopted to develop these incentives namely; increased amount of property tax assessment on green building, cost of green components, rate imposed on property tax assessment, and level of green certification (Shazmin et al., 2016).

Conversely in Malaysia, the practise of providing property tax assessment incentive on green building by local authority as an initiative to encourage green building development at local level is very low. It was found that there is only one local authority, Petaling Jaya City Council, which is currently providing property tax assessment incentive rebate on green building. Though, it was found that the provided rebate incentive requires large financial expenses from the local authority and it is developed without based on property tax assessment basis, as both building and non-building components are eligible for the incentive.

Therefore, this scenario exhibits that the rebate incentive is only relevant for certain local authority with strong financial capability to spend on the incentive program. Hence, it creates issues for local authority that unwilling nor have large amount of budget to allocate for the incentive program. Moreover, a study published by Sipan *et al.* (2014) reveals that majority of Malaysian local authorities have least preference in providing property tax assessment incentive rebate on green building. Consequently, this issue leads to set back the initiative to encourage all local authorities to involve in promoting green building development at local level through providing property tax assessment incentive. In addition, it is documented that rebate

incentive is the least type of property tax assessment incentives provided on green building in United States compared to reduction and exemption incentive (Shazmin et al., 2013).

Therefore, this study is conducted to bridge this gap by developing property tax assessment incentive that does not require large financial expenses from local authority. Besides, this incentive is developed based on property tax assessment basis which relies on improved value. Improved value is adopted as this study is conducted in Johor state and the basis to develop property tax assessment incentives adopted by other countries are based on the concept of improved value including; increased amount of property tax assessment on green building and cost of green component. Improved value might have positive relationship with amount of property tax assessment imposed on property and local authority tax revenue. Higher improved value is translated into higher amount of property tax assessment imposed on property. Consequently, might leads to higher property tax revenue for the local authority. Fundamentally, improved value is derived from a property market value. However, for property tax assessment purpose, a property market value derived from cost method which encompasses land value and building cost.

Accordingly, this study determines green building cost based on green building components that are integrated with building envelope, known as green envelope components. Several studies have proved that the integration of green components with building envelope is an effective way to regulate indoor comfort of building and reduce energy demand of building (Rodriguez-Ubinas *et al.*, 2014; Yu *et al.*, 2015; Koo *et al.*, 2014; Azari, 2014). Most importantly, several green envelope components were proved to have effect on property value. It is revealed that each country implementing property tax assessment incentive including Spain, Romania, Italy, Bulgaria, United States, Canada, and India have provided the incentive on building and non-building components which are suitable for climates and culture varying from one another, including Malaysia. Therefore this study is conducted to developed property tax assessment incentive models based on green envelope

components usage that relevance and appropriate under Malaysia tropical climates, development contexts, and cultures.

1.3 Research Questions

Notwithstanding this, based on the aforesaid issues, some questions arise to be solved in this research as follows:

1. What are the green envelope components of green building applicable to Malaysia weather climates?
2. What are the effects of integration between green components with building and the property value?
3. How to develop property tax assessment incentive without involving financial requirement from the local authority and at the same time do not decrease the existing tax revenue of the local authority?

1.4 Research Aim

The primary aim of this research is to develop property tax assessment incentive models based on improved value without any financial expenses from the local authority in order to implement the incentive program. This is as an initiative to encourage local authority to participate in promoting the growth of new and retrofit green building by providing property tax assessment incentive.

1.5 Research Objectives

Hence, in order to achieve the above aims, there are three objectives outlined in this study as below;

1. To determine green envelope component of green building certified under Malaysia Green Building Index (GBI) rating tool.
2. To analyze the effect of the determined green envelope component of green building on property value.
3. To develop and validate property tax assessment incentive model on green building as an initiative for green building development.

1.6 Research scope

The scope of this research consists of retrofit green building, green envelope components, research area, and types of property.

1.6.1 Retrofitted Green Building

The central focus of this study is to encourage greening the existing building stock. Retrofitted green building is described as to increase the efficiency of existing building through incorporates green component, design, material and technologies (Deloitte and Charles, 2008). According Barlow and Fiala (2007), in building sector,

majority of energy is consumed by existing buildings while the replacement rate of existing building by the newly built building is only around 1 to 3% per year. In addition, Menassa (2011) reports that more than 80% of energy is consumed by a building during its life cycle when the building is in actual occupancy and usage. Therefore, this indicates that existing building stock is a significant target for greening purposes.

Ma *et al.* (2012) proposes that building retrofitting is being considered as one of prominent approaches to realistically achieve the aims to reduce building energy consumption and greenhouse gas emissions. According to Deloitte and Charles (2008), a building does not have to be new to be green. Existing building can undergo a top-to-bottom green retrofitting that incorporates green design, material, building components, and technologies. A random survey shows that about one to two million new buildings are being constructed in Malaysia every year (Sipan *et al.*, 2014). Even, if each new building uses net-zero energy technology, it is estimated that it will still take decades to achieve significant impact on the overall energy consumption for the entire building stock (Sipan *et al.*, 2014). Hence, many more productive approaches to achieve building energy efficiency are to focus on the retrofit of existing buildings.

1.6.2 Green envelope components

The scope of this study focuses on greening the existing building stock through integration of green component with building, precisely green building components. This is due to the value of property is derived from the assessment of building components specifically; roof, ceiling, wall, and floor. Green building component is described as the integration of green components with building which is derived from green criteria of green rating tool. There are numerous green building components documented in literatures. However, this study adopts green building

components integrating with building envelope called green envelope components. Several studies have proved that the integration of green components on building envelope is an effective way to regulate indoor comfort of a building and reduce energy demand of a building (Rodriguez-Ubinas *et al.*, 2014; Yu *et al.*, 2015; Koo *et al.*, 2014; Azari, 2014).

Besides, according to Cetiner and Edis (2014), the main focus in retrofitting existing building into green is to reduce the energy consumption and emissions that are directly related to the building daily operation. Therefore, the adoption of green envelope components is able to reduce the building energy consumption and emissions. Moreover, for the purpose to retrofit existing building into green, the integration of green building component with building is more practical and applicable. In the meantime, green design and green material selection are more appropriate to implement during the design and planning stage of a new building construction rather than on existing building.

1.6.3 Research Area

This research is conducted in Johor state which adopts improved value for property tax assessment. Johor comprises 14 local authorities, namely City Council (Johor Bahru), Municipal Council (Johor Bahru Tengah, Kulai, Pasir Gudang, Muar, Kluang, and Batu Pahat) and District Council (Kota Tinggi, Labis, Mersing, Pontian, Segamat, Simpang Renggam and Yong Peng).

However, this study focuses on the development area of Iskandar Malaysia, Johor due to the rapid economic and real estate development sector within the regions. Iskandar development is the proposed model adopting green concept of a socio-economically and environmentally sustainable development zone with

excellent connectivity, infrastructure services, and environmental sensitivity (Rizzo and Glasson, 2012). Iskandar Malaysia is comprised of 221,695 hectare of total land area which is equivalent to more than 3 times the size of Singapore and 2 times the size of Hong Kong. It covers the entire district of Johor Bahru and several parts of Pontian District namely; Mukim of Jeram Batu, Sg.Karang, Serkat and Pulau Kukup.

There are five local authorities under Iskandar Malaysia regions which represent 35% of local authority in Johor namely; Johor Bahru City Council, Johor Bahru Tengah Municipal Council, Pasir Gudang Municipal Council, Kulai Municipal Council and Pontian District Council. Among these local authorities, Kulai Municipal Council is selected as the research area for this study due to the convenience in obtaining data within the administration area. Kulai Municipal council administrates 74700 hectare of total land area. There are total of 81,003 units of properties under Kulai Municipal council consisting of residential, industrial and commercial properties.

1.6.4 Property Type

Residential property is the prominent type of property at 57,167 units which represents 70% of the total property holding in Kulai Municipal Council. This portion represents the landed and non-landed types of residential holding. However, the landed types of residential holding is the largest type of property holding under Kulai Municipal council at around 45,000 units which represents 80% of the total type of residential holding. The major portion of landed residential property in Kulai highlights the significances to encourage this type of holding in order to produce major scale of sustainability effects at local level. Therefore, this study chooses landed residential building as the case study.

All types of landed residential building are appropriate for green retrofitting purpose. The integration of green envelope components on building exclusively depends on the roof and façade design and total area. Therefore, for the purpose to develop property tax assessment model, it is important to determine the minimum size of landed residential property in Kulai in order to determine minimum cost of green envelope components.

Single storey terrace house has the minimum built-up area among others, landed residential building in Kulai. It represents the highest portion of landed residential property in Kulai at 25,000 units which represent 55% of the total landed house. The corner lot of single storey terrace house is appropriate for green retrofitting purposes as it has the largest total external façade area compared to the intermediate terrace house. Therefore, the minimum cost of green envelope components is based on the minimum built-up area of a single storey terrace house in Kulai at 1000sqft (20 x 50).

1.7 Research Significances

This study contributes to several benefits on the real estate academic, valuation field and the society. This study is the pioneer of academic research in Malaysia for the development of property tax assessment incentives on green building. The outcomes from this research are beneficial for several bodies as below:

- i. This study contributes to the expansion of academic knowledge on property valuation in Malaysia where this study explores the valuation of new category of property that is green building. This study has established several green components that make an increase in property value.

- ii. This study opens up a new level of understanding in green building valuation. This is beneficial for valuation practitioners (private and government appraisers) as it provides new knowledge towards the effect of green components on property value. Hence, this study could assist the valuation practitioners in conducting valuation of green building.
- iii. The local authority could benefit from the developed property incentives models where they could encourage the developments of green building among the community without having to sacrifice their existing tax revenues due to the provided incentives. This model is developed compatible with improved value which can serve as a catalyst for the state of Johor especially Kulai Municipal Council (MPKu) to become the local authority that actively promoting the building development and thus could become the sustainable state that implements green development concept in the building sector in Malaysia.
- iv. The developed property tax incentives for green building creates public awareness towards green building benefits where it indirectly educates the public on the benefits of green buildings thus it could encourage them to participate in sustainable building and environment.

1.8 Chapter Organizations

This thesis consists of eight consecutive chapters starting from introduction chapter until the conclusion chapter. Chapter 1 covers the research background, research issues, research questions, research aims, research objectives, research scope, research significance, and chapter organization. Meanwhile Chapter 2 encompasses comprehensive literatures review on the concept of property tax assessment, definition of green building, green building assessment tools. This chapter also provides extensive literature reviews on property tax assessment

REFERENCES

- Acosta, I., Navarro, J., Sendra, J.J. (2015). Towards an Analysis of the Performance of Monitor Skylight under Overcast Sky Conditions. *Energy and Buildings*, 88, 248-261.
- Aizlewood, M.E. (1993). Innovative Daylighting Systems: An Experimental Evaluation. *Lighting Res.Technol.* 25(4), 141-152.
- Alaidroos, A. and Krarti, M. (2005). Optimal design of residential building envelope systems in the Kingdom of Saudi Arabia. *Energy and Buildings* 86, 104-117.
- Alcazar, S. and Bass, B. (2005). Energy Performance of Green Roofs in a Multi Storey Residential Building in Madrid. *International Greening Rooftops For Sustainable Communities*, Washington.
- Alghoul, M.A., Sulaiman, M.Y., Azmi, B.Z., Wahab, M. (2007). Advances on Multi-Purpose Solar Adsorption Systems for Domestic Refrigeration and Water Heating. *Applied Thermal Engineering*, 27, 813-822.
- Ali, B., Sopian, K., AlGhoul, M., Othman, M.Y., Zaharim, A., Razali, A.M. (2009). Economic of Domestic Solar Hot Water Heating System in Malaysia. *European Journal of Scientific Research*, 26(1), 20-28.
- Ali, R., Daut, I., Taib, S. (2012). A Review on Existing and Future Energy Sources for Electricity Power Generation in Malaysia. *Renewable and Sustainable Energy Reviews*, 16, 4047-4055.
- Allen, M. and Dare, W. (2002). Identifying Determinants Of Horizontal Property Tax Inequity: Evidence From Florida. *Journal Of Real Estate Research*, 24(2), 153-64.
- Almusaed, A. (2011). Illuminate by light Shelves. In: *Biophilic and Bioclimatic Architecture*. Springer. 325-332.

- Al-Obaidi, K.M., Ismail, M., Malek, A.R. (2014). A study of the impact of environmental loads that penetrate a passive skylight roofing system in Malaysia Buildings. *Frontier of Architectural Research*, 3, 178-191.
- Al-Obaidi, K.M., Ismail, M., Malek, A.R. (2014). Design and Performance of a Novel Innovative Roofing System for Tropical Landed Houses. *Energy Conservation and Management*, 85, 488-504.
- Al-Rub, H., Iqbal, A., Amin, S., Abdelkadar, G., Salem, N., Mansoor, S., Mirza, T., Ahmed, S. (2010). Feasibility Analysis of Solar Photovoltaic Array Cladding on Commercial Towers in Doha, Qatar-A case Study. *International Journal of Sustainable Energy*. 29(2), 76-86.
- Alrubaih, M.S., Zain, M.F.M., Alghoul, M.A., Ibrahim, N.L.N., Shameri, M.A., Flayeb, O. (2013). Research and Development on Aspects of Daylighting Fundamentals. *Renewable and Sustainable Energy Reviews*. 21, 494-505.
- Al-Tamimi, N. and Syed Fadzil, S.F. (2011). The potential of shading devices for temperature reduction in High-Rise Residential Buildings in the Tropics. *Procedia Engineering*. 21, 273-282.
- Al-Tamimi, N. and Syed Fadzil, S.F. (2012). Energy-Efficient Envelope Design for High-Rise Residential Buildings in Malaysia. *Architectural Science Reviews*. 55(2), 119-127.
- American Institute of Architect (2012). *Local Leaders in Sustainability Green Building Incentive Trends*. The American Institute of Architects. New York.
- Ar Zuhairuse, M.D. (2009). Potential Development of Rainwater Harvesting in Malaysia. *Proceeding of the 3rd WSEAS International Conference on Energy Planning, Energy Saving, and Environmental Education*. ISSN:1790-5095, ISBN:978-960-474-093-2, 158-164.
- Arrifian B. and Hasmah A.Z (2001). *Prinsip Penilaian Statut*. Johor Bahru : Universiti Teknologi Malaysia, Skudai.
- Arrow, K., Cropper, M., Eads, G., Hahn, R., Lave, L., Portney, P., Russell, M., Scmalensee, N., R., Smith, V., Stavins, R. (1996). Is There a Role for Cost benefit analysis in Environmental, Health, and Safety Regulation? *Science* 272, 221-222.
- Ascione, F., Bianco, N., Rossi, F.D., Turni, G., Vanoli, G.P. (2013). Green Roofs in European Climates. Are Effective Solutions for the Energy Saving in Air Conditioning? *Applied Energy*. 104, 845-859.

- ASHARE Handbook Fundamental (2001). *American Society of Heating and Air Conditioning Engineer*. Atlanta.
- ASHRAE (1989). ASHRAE Standard 62-1989, Ventilation for Acceptable Indoor Air Quality, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Atlanta.
- Azari, R. (2014). Integrated Energy and Environmental Life Cycle Assessment of Office Building Envelopes. *Energy and Buildings*. 82, 156-162.
- Azhari Husin (1996). *Harta Tanah: Kaedah Penilaian*. Kuala Lumpur: Dewan Bahasa Dan Pustaka
- Azkorra, Z., Perez, G., Coma, J., Cabeza, L.F., Bures, S., Alvaro, J.E., Erkoreka, A., Urrestarazu, M. (2014). Evaluation of Green Walls as a Passive Acoustic Insulation System for Buildings. *Applied Acoustics*. 89, 46-56.
- Balaji, N.C., Mani, M., Reddy, B.V.V. (2014). Discerning Heats Transfer in Building Materials. *Energy Procedia*. 54, 654-668.
- Baldinelli, G. (2009). Double Skin Faced for Warm- Climates Regions: Analysis with a Solution with an Integrated Movable Shading System. *Building and Environment*. 44, 1107-1118.
- Barbosa, S. and Ip, K. (2014). Perspective of Double Skin Facades for Naturally Ventilated Buildings: A Review. *Renewable and Sustainable Energy Reviews*. 40, 1019-1029.
- Barlett, E. and Nigel, H. (2000). Informing the Decision makers of the Cost and Value of Green Building. *Building Research and Information* 28, 315-324.
- Barlow, S. and Fiala, D. (2007). Occupant Comfort In UK Offices—How Adaptive Comfort Theories Might Influence Future Low Energy Office Refurbishment Strategies. *Energy and Builidng* 39, 836-846.
- Bates, A.J., Sadler, J.P., Mackay, R. (2013). Vegetation Development Over Four Years on Two Green Roofs in the UK. *Urban Forestry Urban Green*. 12, 98-108.
- Beltran, L.O., Lee, E.S., Selkowitz, S.E. (1996). Advanced Optical Daylighting Systems: Light Shelves and Light Pipes. *IESNA Conference*. 4-7 August. Cleveland, Ohio, 1-16.
- Berardi, U., GhaffarianHoseini, A., GhaffarianHoseini, A. (2014). State-Of-The-Art Analysis of the Environmental Benefits of Green Roofs. *Applied Energy*. 115, 411-428.

- Bianchini, F. and Hewage, K. (2012). Probabilistic Social Cost-Benefit Analysis for Green Roofs: A Lifecycle Approach. *Building and Environment* 58, 152-162.
- Biernert, S., Waggoner, C. and Steixner, D. (2009). Models to Evaluate the Quantitative Effects of Climate Change on Real Estate Markets. *Proceeding of the Pacific Rim Real Estate Conference 2008*, Sydney, 18-21 January.
- Binabid, J.(2010). *Vertical Garden: The Study of Vertical Garden and Their Benefits for Low Rise Building in Moderate And Hot Climates*. United State-California. University of southern California.
- Blasco, M., Crispin, C., Ingelaere, B. (2004). Acoustical Performance of Double Ventilated Glass Façade. *The 33rd International Congress and Exposition on Noise Control Engineering*. 22-25 August. Prague, Czech Republic. 1-10.
- Bloom, B., Nobe, M.C. and Nobe, M.D. (2011). Valuing Green Home Designs: A Study of Energy Star Homes. *JOSRE* 3 (1), 109-126.
- Boubekri, M. (2008). *Daylighting, Architecture and Health*. Elsevier.
- Bowman, R. and Wills, J. (2008). Valuing Green: How Green Buildings Affect Property Values and Getting the Valuation Method Right. Australian Green Building Council, Melbourne.
- Brounen, D., Kok, N. and Menne, J. (2009). Energy Performance Certification in the Housing Market. Implementation and Valuation in the European Union. European Centre for Cooperate Engagement, Maastricht University, Netherlands. Available at: <http://www.fdwewb.unimaas.nl/finance/news/energy.pdf>.
- Brundtland G et al (1987) *Our Common Future: Report of the 1987 World Commission on Environment and Development*, Oxford, Oxford University Press.
- Bullow-Hube, H. (2001). *Energy Efficient Window Systems: Effects on Energy Use and Daylight in Buildings*. Lund Sweden: Lund University.
- Butt, P. (2010). *Land Law 6th edition*. Sydney: Thomson Lawbook Co. (Thompson Reuters).
- Bylaw No.09-040, Sec.226. Revitalization tax exemption (Green power facilities) bylaw. City of Victoria, Canada.
- Bylaw No.3506, Sec. 6.1 (2013). Revitalization tax exemption program. Province of British Columbia, Canada.

- Cansino, J.M., María del P. Pablo-Romero, Rocío Román, Rocío Yñiguez (2010). Tax Incentives to Promote Green Electricity: An Overview of EU-27 Countries. *Energy Policy* 38, 6000-6008.
- Cansino, J.M., María del P. Pablo-Romero, Rocío Román, Rocío Yñiguez (2011). Promoting Renewable Energy Sources for Heating and cooling in EU-27 Countries. *Energy Policy* 39, 3803-3812.
- Canziani, R., Peron, F., Rossi, G. (2004). Daylight and Energy Performance of a New Type of Light Pipe. *Energy and Building*. 36, 1163-1176.
- Cartalis, C., Synodinou, A., Proedrou, M., Tsangrassoulis, A., Santamouris, M. (2001). Modifications in Energy Demand Inurban Areas as a Result Of Climate Changes: An Assessment For The Southeast Mediterranean Region. *Energy Conversion and Management* 42 (14), 1647–1656.
- Carter, D.J. (2002). The Measured and Predicted Performance of Passive Solar Light Pipe Systems. *Lighting Res. Technol.* 34(1), 39-52.
- Carter, T. and Keeler, A. (2008). Life-Cycle Cost-Benefits Analysis of Extensive Vegetated Roof Systems. *Journal of Environment Management* 87, 350-363.
- Cassard, H., Denholm, P., Ong, Sean. (2011). Technical and Economic Performance of Residential Solar Water Heating in the United States. *Renewable and Sustainable Energy Reviews*.15, 3789-3800.
- Castleton, H.F., Stovin, V., Beck, S.B.M, Davison, J.B. (2010). Green Roofs; Building Energy Savings and the Potential for Retrofit. *Energy and Building*. 42, 1582-1591.
- Certiner, I. and Edis, E. (2014). An Environmental and Economic Sustainability Assessment Method for Retrofitting of Residential Buildings. *Energy and Buildings*. 74, 132-140.
- Chan E.H.W., and Yung, E. (2002). “Evaluating Environmental Management Policies: an international trend.” Development of Construction Management and Real Estate, Yinchuan, China. ISBN: 962-367-310-8, 100-111.
- Chan, A.L.S, Chow, T.T., Fong, K.F., Lin, Z. (2009). Investigation on Energy Performance of Double Skin Façade in Hong Kong. *Energy and Buildings*. 41, 1135-1142.
- Chao, M. and Parker, G. (2000). Recognition of Energy Costs and Energy Performance in Commercial Property Valuation: Recommendations and

- Guidelines for Appraisers, Institute for Market Transformation for the New York State Energy Research and Development Authority, New York.
- Chel, A. (2014). Performance of Skylight Illuminance Inside A Dome Shaped Adobe House under Composite Climate at New Delhi (India): A Typical Zero Energy Passive House. *Alexandria Engineering Journal*. 53, 385-397.
- Chen, C.F. (2013). Performance Evaluation and Development Strategies for Green Roofs in Taiwan: A Review. *Ecol Eng*. 52, 61-68.
- Cheung, C.K., Fuller, R.J., Luther, M.B. (2005). Energy-efficient envelope design for high-rise apartment. *Energy and Buildings*. 37(1), 37-48.
- Chirarathananon, S., Chendsiri, S., Renshen, L. (2000). Daylighting through Light pipes in the Tropics. *Solar Energy*. 69(4), 331-341.
- Choi C. (2009). Removing Market Barriers to Green development: Principles and Action Projects to Promote Widespread Adoption of Green Development Practices. *The Journal of Sustainable Real Estate* .
- Claus, K. and Rousseau, S. (2012). Public versus Private Incentives to Invest in Green Roofs: A Cost-Benefits Analysis for Flanders. *Urban Forestry and Urban Greening* 11(4), 417-425.
- Clement, D., Lehman, M., Hamrin, J. and Wiser, R. (2005). “International Tax Incentives for Renewable Energy: Lessons for Public Policy”, *Center for Resource Solutions, San Francisco*.
- Cochran, W.G. (1963). *Sampling Techniques*, 2nd Ed. New York, John Wiley and Sons, Inc.
- Cole, R. (2003). Building Environmental Assessment Methods: A Measure of Success. *Special Issue Article In: The Future of Sustainable Construction 2003*.
- Commercial Real Estate Development Association (2007). Green Building Incentives That Work: A look at How Local Government are Incentivizing Green Development. *NAIOP Research Foundation, Tucson*.
- Connelly, M and Hodgson, M. (2008). Sound Transmission Loss of Extensive Green Roofs: Field Test Results. *Can Accoust*. 36, 74-75.
- Connelly, M. and Hodgson, M. (2013). Experimental Investigation of the Sound Transmission of Vegetated Roofs. *Applied Acoustics*. 74, 1136-1143.
- Cox, B.K. (2010). *The Influence of Ambient Temperature on Green Roof R-Values*. Master Thesis. Portland State University.

- Creswell J.W. (2012). *Research Design Qualitative, Quantitative and Mixed Methods Approaches*. Sage Publications.
- Crocker, L.M. and Algina, J. (1986). *Introduction to Classical and Modern Test Theory*. New York Holt, Reinhart and Winston.
- Dapaah K.A., Hiang L.K. and Shi N.Y., Sharon (2009). Sustainability of Sustainable Real Property Development. *JOSRE* Vol.1, No.1, Pp. 204 – 225.
- Dastrup, S.R., Zivin, J.G., Costa, D.L. and Kahn, M.E. (2012). Understanding the Solar Home Price Premium: Electricity Generation and Green Social Status. *European Economic Review* 56, 961-973.
- Davies, P. and Osmani, M. (2011). Low Carbon Housing Refurbishment Challenges and Incentives: Architects' Perspectives. *Building and Environment*. 46,1691-1698.
- De Gracia, A., Castell, A, Navvaro, L., Cabeza, L.F. (2013). Numerical Modelling of Ventilated Façade: A Review. *Renew Sustain Energy Rev*. 22, 539-549.
- Deloitte and Charles, L. (2008). The Dollars and Sense of Green Retrofits. Deloitte Development LLC. United State.
- Deng, Y. and Wu, J. (2014). Economic Returns to residential Green Building Investment: The Developers' Perspective. *Regional Science an Urban Economics* 47, 35-44.
- Department of Standards Malaysia. MS 1525:2007. Malaysia Standard: Code of Practice on Energy Efficiency and Use of Renewable Energy for Non-Residential Builidngs. 1st revision, Malaysia.
- Des Rosiers, F., Theriault, M., Kestens, Y. and Villeneuve, P. (2002). Landscaping and House Values: An Empirical Investigation. *J Real Estate Res* 23, 139-161.
- Dillman, D. A. (2007) *Mail and Internet Surveys - The Tailored Design Method*, 2nd ed. New York. Wiley.
- Dinan, T.M., & Miranowski, J.A. (1989). Estimating the implicit price of energy efficiency improvements in the residential housing market: a hedonic approach. *Journal of Urban Economics* 25(1), 52–67.
- Ding, C.K.C. (2008). Sustainable Construction: The Role Of Environmental Assessment Tools. *Journal of Environmental Management* 86, 451 – 464.

- Ding, W., Hasemi, Y., and Yamada, T. (2005). Natural Ventilation Performance of a Double-Skin Facade with a Solar Chimney. *Energy and Buildings*, 37(4), 411-418.
- DOE (2010). Building Energy Data Book, Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy, Washington, D.C., United States.
- Donminquez, A., Kleissl, J., Luvall, J.C. (2011). Effect of Solar Photovoltaic Panels on Roof Heat Transfer. *Solar Energy*. 85, 2244-2255.
- DSIRE:Database of State Incentives for renewable & Efficiency (2009).<http://www.dsireusa.org/glossary/index>. Retrieved August 2011.
- Economic Planning Unit (2006). *Ninth Malaysia Plan 2006-2010*, Economic Planning Unit, Putrajaya, Malaysia.
- Edmonds, I.R. and Greenup, P.J. (2002). Daylighting in the Tropics. *Solar Energy*. 73(2), 111-121.
- Edmonds, I.R., Jardine, P.A., Rutledge, G. (1996). Daylighting with Angular-Selective Skylights: Predicted Performance. *Lighting Res. Technol.* 28, 122-130.
- Eichholtz, P., Kok, N. and Quigley, J.M. (2008). Doing Well by Doing Good? Green Office Buildings. Working Paper No. W08-001, University of California, Berkeley.
- Eicker, U., Fux, V., Bauer, U., Mei, L., Infield, D. (2008). Facades and Summer Performance of Buildings. *Energy and Buildings*. 40, 600-611.
- Ellison, L., Sayce, S. and Smith, J. (2007). Socially Responsible Property Investment: Quantifying the Relationship between Sustainability and Investment property worth. *Journal of Property Research* 24(3), 191-219.
- EuroAce (2009). Current Financial and Fiscal Incentives Program for Sustainable Energy in Building across Europe. *EuroAce, Belgium*.
- Farhoodnea, M., Mohamed, A., Khatib, T., Elmenreich, W. (2015). Performance Evaluation and Characterization of a 3-Kwp Grid- Connected Photovoltaic System Based on Tropical Field Experimental Results: New Results and Comparative Study. *Renewable and Sustainable Energy*. 42, 1047-1054.
- Floyd, D., Parker, D. (1998). Daylighting: Measuring the Performance of Light Shelves and Occupant-Controlled Blinds on a Dimmed Lighting System. *11th*

- Symposium on Improving Building Systems in Hot and Humid Climates*. June 1-2. Fort Worth, Texas. 415-418.
- Flynn, T.G., and Ahmed, N.A. (2005). Investigation of rotating ventilator using smoke flow visualisation and not-wire anemometer. In *Proceeding of 5th Pacific Symposium on Flow Visualisation and Image processing* Whitsundays, Australia, Paper No. PSFVIP-5-214.
- Fong, K.F. and Lee, C.K. (2015). Investigation of Separate or Integrated Provision of Solar Cooling and Heating for Use in Typical Low-Rise Residential Building in Subtropical Hong Kong. *Renewable Energy* 75, 847-855.
- Fowke R. and Prasad D. (1996). Sustainable Development, cities and Local Government. *Australian Planner* 33(2), pp 61-66.
- Franzsen, R. (2013). Property Taxation in Developing Countries. *8th Mass Appraisal Valuation Symposium*. 13-14 June. South Africa.
- Franzsen, R.C.D and McCluskey, W.J. (2003). *An Exploratory Overview of Property Taxation in the Commonwealth of Nations*, Lincoln Institute of Land Policy. Research Project.
- Freewan, A.A.Y., (2014). Impact of External Shading Devices on Thermal and Daylighting Performance of Offices in Hot Climate Regions. *Solar Energy*. 102, 14-30.
- Freewan, A.A.Y., Shao, L., Riffat, S. (2008). Optimizing Performance of Light Shelf By Modifying Ceiling Geometry in Highly Luminous Climates. *Solar Energy*. 82, 343-353.
- French, N. and Gabrielli, L. (2007). Market Value and Depreciated Replacement Cost: Contradictory or Complementary? *Journal of Property Investment and Finance* 25(5), 515-524.
- Friedman, C., Becker, N. and Erell, E. (2014). Energy Retrofit of Residential Building Envelopes in Israel: A Cost-Benefit Analysis. *Energy* 77, 183-193.
- Fruest, F. and Mcallister, P. (2008). Pricing Sustainability: An Empirical Investigation of the Value Impact of Green Building Certification. Working Paper from the *Proceedings of the American Real estate Society Conference*, April, Florida.
- Gago, E.J., Muneer, T., Knez, M., Koster, H. (2015). Natural Light Controls and Guides in Buildings: Energy Saving For Electrical Lighting, Reduction of Cooling Load. *Renewable and Sustainable Energy Reviews*.41, 1-13.

- Gao, X. and Asami, Y. (2007). Effect of Urban Landscape on Land Prices in Two Japanese Cities. *Landscape Urban Plan* 81, 155-166.
- Garcia, E. and Herde, A.D. (2007). The Most Efficient Position of Shading Devices in a Double-Skin Façade. *Energy and Building*. 39, 364-373.
- Gay, L. (1987). *Educational Research: Competencies for Analysis and Application*. Merrill Publishing Co. Columbus.
- George, D. and Mallery, P. (2003). *SPSS for Windows step by step: A Simple Guide and Reference*. 4th Edition. Boston: Ally & Bacon.
- Gonzales J.M et al. (2013). Understanding local adoption of tax credit to promote solar thermal energy: Spanish municipalities' case. *Energy* 62, 277-284.
- Gonzalez, J.M., Pablo, M.D.P., Antonio, S.B. (2013). Understanding Local Adoption of Tax Credits to Promote Solar-Thermal Energy: Spanish Municipalities' Case. *Energy*. 62, 277-284.
- Gorgulu, S. and Ekran, N. (2013). Energy saving in lighting system with fuzzy logic controller which uses light pipe and dimmable ballast. *Energy and Building*. 62, 172-176.
- Gouchoe S. (2000). Local government and community programs and incentives for renewable energy-national report. *North Carolina Solar Center*.
- Granadeiro, V., Correia, J.R., Leal, V.M.S., Duarte, J.P. (2013). Envelope-Related Energy Demand: A Design Indicator of Energy Performance for Residential Buildings in Early Stages. *Energy and Building*. 61, 215-223.
- Gratia, E. and Herde, A.D. (2007). Are the Energy Consumption Decreased With The Addition Of A Double-Skin? *Energy and Building*. 39, 605-619.
- Green Building Index. (2013). Green Building Index Criteria . Retrieved Accessed many times since October 2011, from <http://www.greenbuildingindex.org>
- Gregoire, B.G. and Clausen, J.C. (2011). Effect of a Modular Extensive Green Roof on Storm Water Runoff and Water Quality. *Ecological Engineering*. 37, 963-969.
- GRIHA (2009). Green Rating for Integrated Habitat Assessment. <http://grihaindia.org/>. Last accessed March 2013.
- Guidry K. (2004). How Green is Your Building? An Appraiser Guide to Sustainable Design. *The Appraisal Journal*, 57-68.
- Gupta, S.C. and Kapoor, V.K. (1970). *Fundamental of Mathematical Statistics*. New Delhi, India: SC Publication.

- Gupta, S.C. and Kapoor, V.K. (1970). *Fundamental of Mathematical Statistic*. SC Publication, New Delhi, India.
- H. Yang, Z. Zhu, J. Burnett, L. Lu (2001). Simulation Study on the Energy Performance of Photovoltaic Roofs. *ASHRAE Transactions*, vol. 107, pt. 2.
- Haapio, A. (2008). *Environmental Assessment of Buildings*. Helsinki University of Technology (Dissertation), Espoo, Finland.
- Haggag, M., Hassan, A., Elmasry, S. (2014). Experimental Study on Reduced Heat Gain through Green Facades in a High Heat Load Climate. *Energy and Buildings*. 82, 668-674.
- Hamdan, A.M. (2005). Can Climate Responsive Become An Essential Lingua Franca For Malay Architecture? *Proceeding: International Seminar on Malay Architecture as Lingua Franca*, Trisakti University, Jakarta, Indonesia: 22-23 June, (348-352).
- Han, G. and Srebric, J. (2015). Comparison of Survey and Numerical Sensitivity Analysis Results to Assess the Role of Life Cycle Analyses from Building Designers' Perspectives. *Energy and Buildings*. 108, 463–469.
- Hanley, N. and Spash, C.L. (1993). *Cost–Benefit Analysis and the Environment*. Edward Elgar Publishing, Inc. United Kingdom.
- Haris, A.H. (2008). MBIPV Project: Catalysing Local PV Market. *Kuala Lumpur, Malaysia: Finance and Investment Forum on PV Technology*.
- Harrison, S., Herbohn, J., Mangaoang, E. and Vanclay, J. (2002). *Socio-Economic Research Methods in Forestry: A Training Manual*. Cooperative Research Centre for Tropical Rainforest Ecology and Management. Rainforest CRC, Cairns.
- Hasse, M. and Amato, A. (2006). Simulation of Double-Skin Facades for Hot and Humid Climate. *Second National IBPSA-USA Conference*. 2-4 August, Cambridge. 25-33.
- Hasse, M., Silva, F.M.D., Amato, A. (2009). Simulation of Ventilated Facades in Hot and Humid Climates. *Energy and Buildings*. 41, 361-373.
- Hassid, S., et al., 2000. The effect of the Athens Heat Island on Air Conditioning Load. *Energy and Buildings* 32 (2), 131–141.
- Hatcher, L. (1994). *A Step-by-Step Approach to Using the SAS (R) System for Factor Analysis and Structural Equation Modelling*. Cary, NC: SAS Institute.

- Hazami, M., Naili, N., Attar, I., Farhat, A. (2013). Solar Water Heating Systems Feasibility for Domestic Requests in Tunisia: Thermal Potential and Economic Analysis. *Energy Conversion and Management*. 76, 599-608.
- Hee, W.J., Alghoul, M.A., Bakhtyar, B., Elayeb, O., Shameri, M.A., Alrubaih, Sopian, K. (2015). The Role of Window Glazing On Daylighting and Energy Saving in Buildings. *Renewable and Sustainable Energy Reviews*. 42, 323-343.
- Heiselberg, P. (2006). Design of Natural and Hybrid Ventilation, DCE Lecture Notes No.005. Aalborg University.
- Henemann, A. (2008). BIPV: Built in Solar Energy. *Renewable Energy Focus* 9 (6), 14-19.
- Heschong Mahone (1998). *Skylighting Guidelines*. Supported by Southern California Edison and the American Architectural Manufacturing Association (AAMA). A detailed guide for skylight design. Available at: www.energydesignresources.com.
- Hien, W.N. and Istiadji, A.D. (2003). Effect of External Shading Devices on Daylighting and Natural Ventilation. *8th International IBPSA Conference*. 11-14 August. Eindhoven, Netherlands. 475-482.
- Hoen, B., Wiser, R., Cappers, P. and Thayer, M. (2011). An Analysis of the Effect of Residential Photovoltaic Energy System on Home Sales Prices in California. Ernest Orlando Lawrence Berkeley National Laboratory Report. Available at: <http://eetd.lbl.gov/ea/emp/reports/lbnl-4476e.pdf>.
- Hossain, M.S., Saidur, R., Fayaz, H., Rahim, N.A., Islam, M.R., Ahamed, J.U., Rahman, M.M. (2011). Review on Solar Water Heater Collector and Thermal Energy Performance of Circulating Pipe. *Renewable and Sustainable Energy Reviews*. 15, 3801-3812.
- Housing Planning Guideline (2011). Garis Panduan Perancangan Perumahan. Jabatan Perancangan Bandar dan Desa Semenanjung Malaysia. Kementerian Perumahan dan Kerajaan Tempatan.
- IAAO (2013). *Glossary for Property Appraisal and Assessment*. Second Edition. Kansas City. Missouri 64104-1616.
- Ibrahim, S., Maimunah, S., and Shazmin, S.A.A. (2014). Green Building Incentive Strategies for Property Tax Assessment. Research Vote No: 4B052, Universiti Teknologi Malaysia, Johor.

- Ichihara, K. and Cohen, J. (2011). New York City Property Values: What is the Impact of Green Roofs on Rental Pricing? *Lett Spat Resourc Sci.* 4, 21-30.
- ICLEI (2013). State level urban low carbon policy notes: Rajasthan. *British High Commission New Delhi.*
- IESNA Illuminating Engineering society of North America (1993). *American National Standards Practice for office lighting.* USA. Illuminating engineering society.
- Ismail Omar (1997). *Penilaian Harta Tanah.* Kuala Lumpur: Dewan Bahasa Dan Pustaka.
- Ismail, A., Muna, H.A.B.S., Malek, A.A.R. (2011). The Investigation of Green Roof and White Roof Cooling Potential on Single Storey Residential Building in the Malaysian Climate. *International Journal of Civil, Architecture, Structural and Construction Engineering.* 5(4), 20-28.
- Ismail, A., Muna, H.A.B.S., Malek, A.A.R., Yeok, F.S. (2011). Cooling Potentials and CO₂ Uptake of Ipomoea Pes-Caprae Installed on the Flat Roof Of a Single Storey Residential Building in Malaysia. *Procedia Social and Behavioural Sciences.* 35, 361-368.
- Ismail, M. and Rahman, A.M.A. (2012). Rooftop Turbine Ventilator: A review and Update. *Journal of Sustainable Development* 5(5), 121-131.
- Israel, G.D. (1992). Sampling The Evidence of Extension Program Impact. Program Evaluation and Organizational Development, IFAS, University of Florida. PEOD-5.
- IVS (2011). International Valuation Standards 2011. International Valuation Standards Councils. SBN: 978-0-9569313-0-6. United Kingdom.
- Iwaro, J., Mwasha, A. and Rupert, G.W. (2011). Modelling the performance of residential building envelope: the role of sustainable energy performance indicators. *Energy Build.*, 43 (9), 2108–2117
- Jaafar, B., Said, I. and Rasidi, M. H. (2011). Evaluating the impact of vertical greenery system on cooling effect on high rise buildings and surroundings: a review, *In Proceedings of the 12th International Seminar on Environment and Architecture*, Universitas Brawijaya, 10-11 November 2011, Indonesia, 8 pp.

- Jayantha, W.M. and Man, W.S. (2013). Effect of Green Labelling on Residential Property Price: A case Study in Hong Kong. *Journal of Facilities Management* 11(1), 31-51.
- Jim, C.Y. (2012). Effect of Vegetation Biomass Structure on Thermal Performance of Tropical Green Roof. *Landscape Ecol Eng.* 8, 173-187.
- Johnson, R.C. and Kaserman, D.L. (1983). Housing Market Capitalization of Energy-saving Durable Good Investments. *Economic Inquiry* 21, 374-86.
- Johnston, R.J., (1983). *Philosophy and Human Geography: An Introduction To Contemporary Approaches*. London: Edward Arnold.
- Kadir, M.Z.A.A., Rafeeu, Y., Adam, N.M. (2010). Perspective Scenarios for the Full Solar Energy Development in Malaysia. *Renewable and Sustainable Energy Reviews*.14, 3023-3031.
- Kats G., Braman J. and James M. (2010). *Greening Our World: Cost, Benefits and Strategies*. Island Press.
- Khan, N., Su, Y., and Riffat, S.B. (2008). A Review on Wind Driven Ventilation Techniques. *Energy and Buildings* 40, 1586-1604.
- Khatib, T., Mohamed, A., Sopian, K. (2013). A Review of Photovoltaic Systems Size Optimization Techniques. *Renewable and Sustainable Energy Reviews*. 22, 454-465.
- Khatib, T., Mohamed, A., Sopian, K. (2013). Actual performance and characteristic of a grid connected photovoltaic power system in the tropics: A short term evaluation. *Energy Conversion Management*. 71, 115-119.
- Kikuchi, S. and Koshimizu, H. (2013). A Comparison of Green Roof Systems with Conventional Roof for the Storm Water Runoff. *Spat Plan Sustain Dev Strategies Sustain*. 287-303.
- Kim, G., Lim, H.S., Lim, T.S., Schaefer, L., Kim, J.T. (2012). Comparative Advantage of an Exterior Shading Device in Thermal Performance for Residential Buildings. *Energy and Buildings*. 46, 105-111.
- Kim, J., Hong, I., Koo, C.W. (2012). Economic and Environmental Evaluation Model for Selecting the Optimum Design of Green Roof Systems in Elementary Schools. *Environ Sci Technol*. 15, 8475-8483.
- Kim, J.J. and Rigdon, B. (1998). Sustainable Architecture Module: Qualities, Use, and Examples of Sustainable Building Materials. National Pollution Prevention Center for Higher Education. The University of Michigan.

- Kim, S.Y. and Song, K.D. (2007). Determining the Photo Sensor of a Daylight Dimming Control System Using Different Double Skin Envelope Configuration. *Indoor and Built Environment*. 16, 411-420.
- King, M.A. (1983). Welfare Analysis on Tax Reform using Household Data. *Journal of Public Economics* 21, 183-214.
- Kontoleon, K.J. and Eumorfopoulou, E.A. (2010). The Effect of the Orientation and Proportion of Plant-Covered Wall Layer on the Thermal Performance of a Building Zone. *Built Environment*. 45, 1287-1303.
- Koo, C., Park, S., Hong, T., Park, H.S. (2014). An Estimation Model for the Heating and Cooling Demand with a Different Envelope Design Using the Finite Element Method. *Applied Energy*. 115, 205-215.
- Kruzner et al. (2013). Trends in Observable Passive Solar Design Strategies for Existing Homes in the U.S. *Energy Policy* 55, 82-94.
- Kruzner, K., Cox, K., Machmer, B., Klotz, L. (2013). Trends in Observable Passive Solar Design Strategies for Existing Homes in the U.S. *Energy Policy*. 55, 82-94.
- Kwong Q. J., Adam N. M., Sahari B. B. (2014). Thermal comfort assessment and potential for energy efficiency enhancement in modern tropical buildings: a review. *Energy and Buildings*. 68, 547–557.
- Lai, C. (2003). Experiments on the Ventilation Efficiency of Turbine Ventilator used for Building and Factory Ventilation. *Energy Buildings* 35, 927-932.
- Lam W. (1986). *Sunlight as Form Giver for Architecture*. Van Nostrand. New York.
- Langdon and Seah (2014). JUBM and Langdon Seah Construction Cost Handbook Malaysia 2014. KDN PP10466/05/2013(032500).
- Langdon, D. (2007). *The Cost and Benefit of Achieving Green Buildings (Australia)*. Davis Langdon, Sydney.
- Lanham, J.K. (2007). *Thermal Performance of Green Roofs in Cold Climates*. Master Thesis. Queen's University.
- Li, D.H.W. and Tsang, E.K.W. (2008). An Analysis of Daylighting Performance for Office Buildings in Hong Kong. *Built Environ*. 43(9), 1446-1458.
- Li, D.H.W., Tony, N.T., Cheung, K.L. (2009). Energy and Cost Studies of Semi-Transparent Photovoltaic Skylight. *Energy Conservation and Management*. 50, 1981-1990.

- Li, D.H.W., Tsang, E.K.W., Cheung, K.L., Tam, C.O. (2010). An Analysis of Light-Pipe System via Full-Scale Measurements. *Applied Energy*. 87, 799-805.
- Li, H. and Yi, H. (2014). Multilevel governance and deployment of Solar PV panels. *Energy Policy* 69, 19-27.
- Liang J., Li B., Z., Wu Y., and Yao R. M. (2007). An Investigation of the Existing Situation and Trends in Building Energy Efficiency Management in China. *Energy and Buildings*, 39(10) 1098-1106.
- Lien, J. and Ahmed, N. (2012). Numerical Evaluation of Wind Driven Ventilator for Enhance Indoor Air Quality. *Procedia Engineering* 49(0), 124-134.
- Lim, Y.W. and Ahmad, M.H. (2014). The Effect of Direct Sunlight on Light Shelf Performance under Tropical Sky. *Indoor and Built Environment*. 0(0), 1-15.
- Lim, Y.W., Kandar, M.Z., Ahmad, M.H., Ossen, D.R., Abdullah, A.M. (2012). Building Façade Design for Daylighting Quality in Typical government Office Building. *Building and Environment*. 57, 194-204.
- Lin, W.M., Chang, K.C., Chung, K.M. (2015). Payback Period for Residential Solar Water Heaters in Taiwan. *Renewable and Sustainable Energy Reviews*.41, 901-906.
- Littlefair, P.J. (1990). Innovative Daylighting: Review of Systems and Evaluation Methods. *Lighting Res. Technol.* 22(1), 1-17.
- Liu, K.Y. and Baskaran, A. (2005). Using Garden Roof Systems to Achieve Sustainable Building Envelopes. Construction Technology Update, *National Research Council Canada*. 65, 1-6.
- Local Government Act, 1976 (2006). Laws of Malaysia. The Commissioner Of Law Revision, Malaysia, Under The Authority Of The Revision Of Laws Act 1968.
- Lorenz, D. (2006). The Application of Sustainable Development Principles to the Theory and Practice of property Valuation. Dissertation, Karlsruher Schroften Zur Bau. University of Karlsruhe, Karlsruhe.
- Lorenz, D. and Lützkendorf, T. (2005). Complexities of Operating in Foreign Property Markets: Book Review of International Real Estate – An Institutional Approach. *Building Research & Information* 33 (3), 309–307.
- Lorenz, D. and Lutzkendorf, T. (2006). Sustainability in Property Valuation: Theory and Practice. *Journal of Property Investment and Finance* 26(6), 482-521.

- Lorenz, D. and Lützkendorf, T. (2008) Sustainability in Property Valuation – Theory and Practice. *Journal of Property Investment & Finance* 26 (6), 482–521.
- Lorenz, D. and Lutzkendorf, T. (2011). Sustainability and Property Valuation: Systematisation of Existing Approaches and Recommendations for Future Action. *Journal of Property Investment and Finance* 29(6), 644-676.
- Lorenz, D. Truck, S., and Lutzkendorf, T. (2006). Addressing Risk and Uncertainty in Property Valuation: A Viewpoint from Germany. *Journal of Property Investment and Finance* 24(4), 400-433.
- Lorenzo, W. (2001). A Glazing Unit for Solar Control, Daylighting, and Energy Conservation. *Solar Energy*. 70(2), 109-130.
- Lutzkendorf, T. and Lorenz, D. (2005). Sustainable Property Investment: Valuing Sustainable Buildings through Property Performance Assessment. *Building Research and Information* 33(3), 212-234.
- Lutzkendorf, T. and Lorenz, D. (2011). Capturing Sustainability- Related Information for Property Valuation. *Building Research and Information* 39(3), 256-273.
- Ma, Z., Cooper, P., Daly, D., and Ledo, L. (2012). Existing Building Retrofits: Methodology and State of the Art. *Energy and Buildings* 55, 889-902.
- Mahlia, T.M.I, Masjuki, H.H., Saidur, R., and Amalina, M.A. (2004). Cost-Benefits Analysis of Implementing Minimum Energy Efficiency Standards for Household Refrigerator-Freezers in Malaysia. *Energy Policy* 32, 1819-1824.
- Mak, G. (2013). Current Governing Regulation of Renewable Energy for Feed In Tariff (FIT).
- Mani Usilappan (1986). Valuation Under The Improved Value Basis, *Buletin Inspen* 1(4):16-19.
- Manning, P. (1967). Windows, Environment and People. *Interbuild/Arena* 83 (916), 20-25.
- Manso, M. and Castro-Gomes, J. (2015). Green Wall Systems: A Review of Their Characteristics. *Renewable and sustainable energy reviews*.41, 863-871.
- Matsushita, Hiromichi, Yasutaka, S., and Yuichiro, K. (2006). The Effect of Microstructure on Strength and Durability of Mortar Incorporating Recycled Fine Aggregate. *Journal of the Japan Society of Civil Engineers*, 62(1), 230-242

- Matthiessen, L. and Moris, P. (2004). Costing Green: A comprehensive Cost Database and Budgeting Methodology. Davis Langdon, Los Angeles.
- Mazran, I. and Malik, A.A.R. (2012). Rooftop Turbine Ventilator: A Review and Update. *Jurnal of Sustainable Development* 5(5), 121-131.
- Megarry R. And H.W.R Wade (1984). *The Law of Real Property*, 5th edn, Stevens & Sons Limited, London, pp. 11.
- Meins, E., Wallbaum, H., Hardziewski, R. and Feige, A. (2010). Sustainability and Property Valuation: A Risk - Based Approach. *Building Research and Information* 38(3), 280-300.
- Mekhilef S., Saidur R., Safari A. (2011). A Review on Solar Energy Use in Industries. *Renewable and Sustainable Energy Reviews*. 15(4):1777-17790.
- Mekhilef, S., A., Safari, Mustaffa, W.E.S., Saidur, R., Omar, R., Younis, M.A.A. (2012). Solar Energy in Malaysia: Current State and Prospects. *Renewable and Sustainable Energy Reviews*. 16, 386-396.
- Mekhilef, S., Barimani, M., Safari, A., Salam, Z. (2014). Malaysia's Renewable Energy Policies Programs with Green Aspects. *Renewable and Sustainable Energy Reviews*. 40, 497-504.
- Melcher, L. (2007). The Dutch sustainable building policy: a model for developing countries? *Build Environment* 43 (2), 893–901.
- Menassa, C.C. (2011). Evaluating Sustainable Retrofits in Existing Buildings under Uncertainty. *Energy and Buildings*. 43, 3576-3583.
- Miaoulis, G. and Michener, R.D. (1976). *An Introduction to Sampling*. Kendall/Hunt Publishing Company. Dubuque, Iowa.
- Miller, N., Spivey, J. and Florence, A. (2008). Does Green Pay Off? Working Paper Burnham-Moores Centre for Real Estate and CoStar, San Diego.
- Mochida, A., Yoshimo, H., Takeda, T., Kakegawa, T., and Miyauchi, S. (2005). Methods for Controlling Airflow In and Around a Building under Cross Ventilation to Improved Indoor Thermal Comfort. *Journal of Wind Engineering and Industrial Aerodynamics* 93, 437-449.
- Mohsen, A. and Jin, L.K. (2015). Examining Contemporary Issues for Green Buildings from Contractors' Perspectives. *Procedia Engineering*. 118, 470 – 478.
- Molinelli, J.F. and Boyer, L.L. (1987). Measurement and Comparisons of Light shelf Performance in Two Texas Office Buildings. *Proceeding Of The 5th*

Symposium on Improving Building Energy Efficiency In Hot and Humid Climates. Houston, Texas.

- MS: 1525 (2007). Malaysia Standard: Code of Practice on Energy Efficiency and Renewable Energy for Non-Residential Building. Department of Standard Malaysia. ICS: 91.040.01.
- Muhammad-Sukki, F., Munir, A.B., Ramirez-Iniguela, R., Abu-Bakar, S.H., Yasin, S.H.M., McMeekin, S.G., Stewart, B.G. (2012). Solar Photovoltaic in Malaysia: The Way Forward. *Renewable and Sustainable Energy Reviews*. 16, 5232-5244.
- Muldavin, S.R. (2010). *Value Beyond Cost Saving: How to Underwrite Sustainable Properties*. Green Building FC. California.
- Murray, V., O'Flynn, C.J., Beattie, K. (2001). Advanced Building services Simulation Software Providing Design Solutions in Dublin and Boston. 7th *International IBPSA Conference*. 13-15 August 2001. Brazil: Rio de Janeiro, 499-504.
- Myers, G.W. (2012). The Value of Sustainability in Real Estate: A Review from a Valuation Perspective. *Journal of Property Investment and Finance* 30(2), 1115-1144.
- Naspolini, H.F., Militao, H.S.G., Ruther, R. (2010). The Role and Benefits of Solar Water Heating in the Energy Demands On Low-Income Dwellings in Brazil. *Energy Conversion and Management*. 51, 2835-2845.
- Nazim, C. and Engin, K. (2015). *Leadership and Organizational Outcomes*. Springer International Publishing, Switzerland.
- Nevin, R. and Watson, G. (1998). Evidence of Rational Market Valuations for Home Energy Efficiency. *The Appraisal Journal*, 401-409.
- Nevin, R., Bender, C. and Gazan, H. (1999). Construction and The Appraiser: More Evidence of Rational Market Values for Home Energy Efficiency. *The Appraisal Journal*, 454-460.
- Niachou, A., Papakonstantinou, K., Santamouris, A., Tsangrassoulis, A., Mihalakakou, G. (2001). Analysis of the Green Roof Thermal Properties and Investigation of Its Energy Performance. *Energy and Buildings*. 33, 719-729.
- Nikoofard, S., Uguesal, V.I., Morrison, I.B. (2014). An Investigation of Techno economic Feasibility of Solar Domestic Hot Water Heating for the Canadian Housing Stock. *Solar Energy* 101, 308-320.

- Nunnally, J. (1978). *Psychometric Theory*. McGraw-Hill, New York.
- Nygh, P.E and Butt, P. (1997). Butterworths Concise Australian Legal Dictionary. Butterworths, Australia.
- Oakley, G., Riffat, S.B., Shao, L. (2000). Daylight Performance of Light Pipes. *Solar Energy*. 69(2), 89-98.
- Ochoa, C.E. and Capeluto, I.G. (2006). Evaluating Visual Comfort and Performance of Three Natural Lighting Systems for Deep Office Buildings in Highly Luminous Climate. *Built Environ*. 41, 1128-1135.
- Olivieri, L., Caamano-Martin, E., Moralejo-Vazquez, F.J., Martin-Chivelet, N., Olivieri, F., Neila-Gonzalez, N. (2014). Energy Saving Potential of Semi-Transparent Photovoltaic Elements for Building Integration. *Energy*. 76, 527-583.
- Ong, H.C., Mahlia, T.M.I., Masjuki, H.H. (2011). A Review on Energy Scenario and Sustainable Energy in Malaysia. *Renewable and Sustainable Energy Reviews*. 15(1), 639-647.
- Ortiz, O., Castells, F., Sonnemann, G. (2009). Review sustainability in the construction industry: a review of recent developments based on LCA. *Construction and Building Materials* 23 (1), 28–39.
- Osterle, E., Lieb, R.D., Lutz, M., Heuster, W. (2001). *Double Skin Façade-Integrated Planning*. Munich. Prestel.
- Pablo, M.D.P., Sánchez-Braza, M.P., Pérez, M. (2013). Incentives to Promote Solar Thermal Energy in Spain. *Renewable and Sustainable Energy Reviews* 22, 198-208.
- Pall P., Aina T., Stone D.A., Stott P.A., Nozawa T., Hilberts A.G.J., Lohmann D., Allen M.R. (2011). Anthropogenic Greenhouse Gas Contribution to Flood Risk in England and Wales in Autumn 2000. *Nature* 470:382–385.
- Parker, D.S. (2005). Literature Review of the Impact and Need for Attic Ventilation in Florida Homes. Florida Solar Energy Centre.
- Parsons, R.A. (1995). *ASHARE Handbook: Heating, Ventilating, and Air-Conditioning Applications*. ASHARE Atlanta.
- Paumgarten, P.V. (2003). The Business Case for High Performance Green Buildings: Sustainability and it Financial Impact. *Journal of Facilities Management* 2(1), 26-52.

- Pawi S., Juanil D. M., Yusoff W. Z. (2011). Property Tax Management Model of Local Authorities in Malaysia. *Proceeding of the International Conference on Social Science, Economics and Art 2011*. ISBN 978-983-42366-5-6. Putrajaya, Malaysia.
- Peck, S., Callaghan, C., Kuhn, M. and Bass, B. (1999). Greenbacks from Green roofs: Forging a New Industry in Canada. Report Prepared for Canada Mortgage and Housing Cooperation.
- Peng, J., Lu, L., Yang, H., Han, J. (2013). Investigation on the Annual Thermal Performance of a Photovoltaic Wall Mounted on a Multi-Layer Façade. *Applied Energy*. 112, 646-656.
- Perez, G., Rincon, L., Vila, A., Gonzalez, J.M., Cabeza, L.F. (2011). Green Vertical Systems for Buildings as Passive System for Energy Savings. *Applied Energy*. 12, 4854-4859.
- Peri, G., Traverso, M., Finkbeiner, M., Rizzio, G. (2012). The Cost of Green Roofs Disposal in a Life Cycle Perspective: Covering the Gap. *Energy*. 48, 406-414.
- Perini, K. and Rosasco, P. (2013). Cost-Benefit Analysis for Green Facades and Living Wall Systems. *Building and Environment* 70, 110-121.
- Permpituck, S. and Namprakai, P. (2012). The Energy Consumption Performance of Roof Lawn Gardens in Thailand. *Renewable Energy*. 40, 98-103.
- Pickrell, K., DeBenedictis, A., Mahone, A. and Price, S. (2013). Cost-Effectiveness of Rooftop Photovoltaic Systems for Consideration in California's Building Energy Efficiency Standards. *Consultant Report for California Energy Commission*. CEC-400-2013-005-D.
- Pillai, I.R. and Banerjee, R. (2007). Methodology for Estimation of Potential for Solar Water Heating in a Target Area. *Solar Energy*. 81, 162-172.
- Pivo, G. and Fisher, J.D. (2009). *Investment Return from Responsible Property Investments: Energy Efficient, Transit-Oriented and Urban Regeneration Office Property in US from 1998-2008*. Responsible Property Investing Centre, Boston College and University of Arizona Benecki Centre for Real Estate Studies, Indian University, Boston.
- Popescu, D., Bienert, S., Schutzenhofer, C. and Boazu, R. (2012). Impact of Energy Efficiency Measures on the Economic Value of Buildings. *Applied Energy* 89, 454-463.

- Qian Q.K. and Chan E.H.W. (2008). Incentives Instruments for Government and Private Sector Partnership to Promote Building Energy Efficiency (BEE): A Comparative Study Between Mainland China and Some Developed Countries. *International Conference in Building Education and Research*. 1384-1396.
- Qin, X., Wu, X., Chiew, Y.M., Li, Y. (2012). A Green Roof Test Bed for Storm Water Management and Reduction of Urban Heat Island Effect In Singapore. *Brit J Environ Clim Change*. 4, 410-420.
- Rabah K.(2005). Development of energy-efficient passive solar building design in Nicosia Cyprus. *Renewable Energy* 30,937-956.
- Radhi, H., Sharples, S., Fikiry, S. (2013). Will Multi Facade Systems Reduce Cooling Energy in a Fully Glazed Buildings? A Scope Study of UAE Buildings. *Energy built*. 56, 179-188.
- Res Legal Europe (2012). Renewable energy policy database and support. <http://www.res-legal.eu>. Last accessed January 2013.
- Revel, A. and Huynh, B.P. (2004). Characterizing Roof Ventilators. In Presented at *15th Australian Fluid Mechanics Conference*. Sydney, Australia.
- RICS (2005). *Green Value-Green Buildings, Growing Assets*. Green Value, Royal Institution of Chartered Surveyors, London.
- Rizzo, A. and Glasson, J. (2012). "Iskandar Malaysia." *Cities*, 29 (6), 417-427.
- Robbins, C.L. (1986). *Daylighting Design and Analysis*. Van Nostrand. New York.
- Robertson, K. (2004). *Daylighting guides for building*. Solterre Design. NSAA.
- Robertson, K., Mortgage, C., et al. (2003). *Daylighting Guide for Buildings*. Canada Mortgage and Housing Corporation, Ottawa, Ontario, Canada.
- Robinson, J. (2005). Property Valuation and Analysis Applied to Environmentally Sustainable Development. Presented at *12th Annual Pacific Rim Real Estate Conference*, Auckland, New Zealand.
- Rodman, D., Lenssen, N. (1996). A building revolution: how ecology and health Concerns are transforming construction, *Worldwatch paper 124*, Washington, D.C., USA.
- Rodriguez-Ubinas, E., Mantero, C., Porteros, M., Vega, S., Navarro, I., Castillo-Cagigal, M., Matallanas, E. and Gutierrez, A. (2014). Passive Design Strategies and Performance of Net Energy Plus Houses. *Energy and Buildings* 83, 10-22.

- RoGBC (2013). Romanian Green Building council. <http://www.rogbc.org/en/>. Last accessed March 2013.
- Romm J J. and Browning W D. (1998). *Greening the building and the bottom line: increasing productivity through energy efficient design*. Rocky Mountain Institute.
- Roth, K., Lawrence, T., Brodrick, J. (2007). Double Skin Façade. *ASHARE Journal*.
- Rumana, R. and Hamdan, M.A. (2009). The Passive Cooling Effect of Green Roof in High Rise Residential Building in Malaysia. *Sustainable Architecture and Urban Development*. 1, 271-282.
- Sadineni, S., Madala, S., Boehm, R.F. (2011). Passive Building Energy Savings: A Review of Building Envelope Components. *Renewable and Sustainable Energy Reviews*.15, 3617-3631.
- Sadrzadehrafiei, S., Sopian, K., Mat, S., Lim, C.H. (2012). Application of Triple Glazing to Mid-Rise Office Building in Malaysia. *Proceedings of the 1st WSEAS International Conference on Energy and Environment Technologies and Equipment (EEETE '12)*. 20-22 September. Czech Republic.152-156.
- Sadrzadehrafiei, S., Sopian, K., Mat, S., Lim, C.H. (2012). Potential Energy and Emission Reduction through Application of Triple Glazing. *Proceeding Of The 6th International Conference on Energy and Development-Environment-Biomedicine (EDEB'12)*. 7-9 March. Athens.138-142.
- Safer, N., Woloszyn, M., Roux, J.J., (2005). Three Dimensional Simulations with a CDF Tool of the Air Flow Phenomena in Single Flow Double Skin Façade Equipped with Venetian Blinds. *Solar Energy*. 79, 193-203.
- Safikhani, T., Abdullah, A.M., Ossen, D.R., Baharvand, M. (2014). A Review of Energy Characteristic of Vertical Greenery Systems. *Renewable and Sustainable Energy Reviews*. 40, 450-462.
- Salant, P. and Dillman, D. A. (1994). *How to Conduct Your Own Survey*, New York: Wiley.
- Salih, A., Shao, L., Riffat, S. (2000). Study Of Daylight and Solar Infrared Transmitted Through Light Pipes Under UK Climate. *Proceedings of the CIBSE/ILE National Lighting Conference*. 9-11 July. London. 198-207.
- Salvi, M., Horejajova, A., Muri, R., Minergie, M.S.B. (2008). Report from Centre for Corporate Responsibility and Sustainability. University of Zurich,

- Switzerland. Available at :
http://minergie.ch/tl_files/download/ZKB_MINERGIE_Studies_2008.pdf
- Sanati, L. and Utzinger, M. (2013). The Effect of Window Shading Design on Occupant Use Blinds and Electric Lighting. *Building and Environment*. 64, 67-76.
- Sánchez-Braza, M.P. and Pablo, M.D.P. (2014). Evaluation of Property Tax Bonus to Promote Solar Thermal Systems in Andalusia (Spain). *Energy Policy*. 67, 832-843.
- Sandra, K. and Adomatis, S.R.A. (2010). Valuing High Performance Houses. *The Appraisal Journal Spring*, 195-201.
- Santamouris, M. (2012). A Review of Reflective and Green Roof Mitigation Technologies to Fight Heat Island and Improved Comfort in Urban Environments. *Solar Energy*. 30, 12-28.
- Santamouris, M. (2013). Using Cool Pavement as a Mitigation Strategy to Fight Urban Heat Island - A Review of Actual Developments. *Renewable and Sustainable Energy Review*. 26, 224-240.
- Santamouris, M. (2014). Cooling the cities - A Review of Reflective and Green Roof Mitigation Technologies to Fight Heat Island and Improved Comfort in Urban Environments. *Solar Energy*. 103, 628-703.
- Santamouris, M., et al. (2001). On the Impact of Urban Climate on The Energy Consumption Of Buildings. *Solar Energy* 70 (3), 201–216.
- Santamouris, M., Pavlou, C., Doukas, P., Mihalakakou, G., Synnefa, A., Hatzibiros, A., Patargias, P. (2007). Investigating and Analysing the Energy and Environmental Performance of an Experimental Green Roof System Installed in a Nursery School Building in Athens, Greece. *Energy*. 32, 1781-1788.
- Sapian A.R. (2004). *Possibilities of using Void to Improve Natural Cross Ventilation in High-rise Low Cost Residential Building*, Thesis. International Islamic University, Malaysia.
- Sarzynski A., Larrieu J., Shrimali G. (2012). The Impact of State Financial Incentive on Market Deployment of Solar Technology. *Energy Policy* 46, 550-557.
- Sawin, J.L. (2006). Policies In: Assmann D., Laumanns, U. Dieter, U (Eds.), *Renewable Energy – A Global Review of Technologies Policies and Markets. Earth- scan, London*, 71–168.

- Sayigh, A. (2013). *Sustainability, Energy and Architecture Case Study in Realizing Green Building* (1st ed.). Elsevier.
- Schutt, R.K. (2011). *Investigating the Social World: The Process and Practice of Research*. (7th ed.). SAGE Publications, Inc.
- Schutt, R.K. (2011). *Investigating the Social World: The Process and Practice of Research*, 7th Ed. Sage Publication, New York.
- Schweitzer, O. and Erell, E. (2014). Evaluation of the Energy Performance and Irrigation Requirement of Extensive Green Roof in a Water-Scarce Mediterranean Climate. *Energy and Buildings*. 68, 25-32.
- Selkowitz, S., Navvab, M., Matthews, S. (1983). Design and performance of light shelves *Proceeding International Daylighting Conference*. 16-18 February. Phoenix. 267-272.
- Seng, L.M., Lalchand, G., Lin, G.M.S. (2008). Economic, Environmental and Technical Analysis of Building Integrated Photovoltaic Systems in Malaysia. *Energy Policy*. 36, 2130-2142.
- Shafie, S.M., Mahlia, T.M.I., Masjuki, H.H., Andriyana, A. (2011). Current energy usage and sustainable energy in Malaysia: A review. *Renewable and Sustainable Energy Reviews*. 15, 4370-4377.
- Shakouri, M.H., Tahmasebia, M.M., Banihashemib, B. (2011). Assessment of the variation impacts of window on energy consumption and carbon footprint. *Proceeding of the international conference on green building and sustainable cities*. 23-25 March. Kansas City, Missouri. 1-7.
- Shameri, M.A., Alghoul, M.A., Elayeb, O., Fauzi, M.Z., Alrubaih, M.S., Amir, H., Sopian, K. (2013). Daylighting Characteristics of Existing Double-Skin Façade Office Buildings. *Energy and Building*. 59, 279-286.
- Shameri, M.A., Alghoul, M.A., Sopian, K., Fauzi, M.Z., Elayeb, O., (2011). Perspective of Double Skin Façade Systems in Buildings and Energy Saving. *Renewable and Sustainable Energy Reviews*. 15, 1468-1475.
- Shao, L., Elmualim, A.A., Yohannes, I. (1998). Mirror Light Pipes: Daylighting Performance in Real Buildings. *Light Res. Technol.* 30(1).
- Shazmin, S.A.A., Sipan, I., Sapri, M. (2016). Property Tax Assessment Incentives for Green Building: A Review. *Renewable and Sustainable Energy Reviews* 60, 536–548.

- Shazmin, S.A.A., Sipan, I., Sapri, M. (2013). The Potential of Implementing Property Tax Incentives on Green Building in Malaysia . *American Journal of Economics* 3(2), 63-67.
- Shazmin, S.A.A., Sipan, I., Sapri, M. (2015). Malaysian awareness and willingness towards retrofitted green buildings: Community. In *Proceedings of the 25th International Business Information Management Association Conference - Innovation Vision 2020: From Regional Development Sustainability to Global Economic Growth, IBIMA 2015*. (pp. 3419-3433). International Business Information Management Association, IBIMA.
- Shazmin, S.A.A., Sipan, I., Sapri, M., Ali, H. (2013). The basis of property tax incentives models for green building. In *Vision 2020: Innovation, Development Sustainability, and Economic Growth - Proceedings of the 21st International Business Information Management Association Conference, IBIMA 2013*. (Vol. 2, pp. 1182-1188). International Business Information Management Association, IBIMA.
- Shehabi, A., DeForest, N., McNeil, A., Masanet, E., Greenblatt, J., Lee, E.S. (2013). U.S. Energy Saving Potential from Dynamic Daylighting Control Glazing. *Energy builds*. 66, 415-423.
- Shi, L. and Chew, M.Y.L. (2012). A Review on Sustainable Design of Renewable Energy Systems. *Renewable and Sustainable Energy Reviews*.16, 192-207.
- Shin, J.Y., Yun, G.Y., Kim, J.T. (2012). Evaluation of Daylighting Effectiveness and Energy Saving Potentials of Light Pipe Systems in Buildings. *Indoor and Built Environment*. 21(1), 129-136.
- Shrimali G. and Jenner S. (2013). The impact of states policy on deployment and cost of solar photovoltaic technology in the U.S: A sector-specific empirical analysis. *Renewable Energy* 60, 679-690.
- Sick, F. and Erge, T. (1996). *Photovoltaic in Buildings: A design handbook for Architects and Engineers*. James and James Science Publishing. University of Michigan.
- Sigh, A.S. and Masuku, M.B. (2012). An Insight Statistical Techniques and Design in Agricultural and Applied Research. *World Jr. of Agricultural Sciences*. 8(6), 568-584.

- Sigh, A.S. and Masuku, M.B. (2012). An Insight Statistical Technique and Design in Agricultural and Applied Research. *World Jr. Agricultural Sciences* 8(6), 568-584.ra
- Sikula, O., Mohelnikova, J., Plasek, J. (2014). Thermal Analysis of Light Pipes for Insulated Flat Roofs. *Energy and Buildings*. 85, 436-444.
- Singh, M.C. and Garg, S.N. (2010). Illuminance Estimation and Daylighting Energy Savings for Indian Regions. *Renewable Energy*. 35, 703-711.
- Sinton, J.E., Stern, R.E., Aden, N.T., and Levine M.D. (2005). Evaluation of China's Energy Strategy Options. Report prepared for and with the support of the China Sustainable Energy Program, Lawrence Berkley National Laboratory. Available at: http://www.accelenergy.com/downloads/China_Energy_Strategy_2005.pdf
- Sipan, I., Ali, H., Ismail, S., Abdullah, S., Shazmin, S.A.A (2012). GIS-Based Mass Appraisal Model for Equity and Uniformity of Rating Assessment. *International Journal of Real Estate Studies* 7(2), 40-49.
- Sipan, I., Sapri, M., Shazmin, S.A.A., (2014). Green Buildng Incentive Strategies for Property Tax Assessment. Research Vote No: 4B052, Universiti Teknologi Malaysia, Johor.
- SJER (2006). Comprehensive Development Plan for South Johor Economic Region 2006-2025. Khazanah Nasional, Kuala Lumpur, Malaysia.
- Slaman, M. and Griessen, R. (2009). Solar collector Overheating Protection. *Solar Energy*. 83, 982-987.
- Smith, K. and Roeber, P. (2011). Green Roof Mitigation Potential for a Proxy Future Climaye Scenario in Chicago, Illinois. *Journal Applied Meteorology and Climatology*. 50, 507-522.
- Smith, M. L., and Glass, G. V. (1977). Meta-analysis of psychotherapy outcome studies. *American Psychologist*. 32, 752 – 760.
- Sopranzetti, B.J. (2010). *Handbook of Quantitative Finance and Risk Management*. Cheng-Few and Lee.
- Stevanovic S. (2013). Optimization of passive solar design strategies: A review. *Renewable and Sustainable Energy Reviews* 25, 177-196.
- Stevanovic, S. (2013). Optimization of Passive Solar Design Strategies: A Review. *Renewable and Sustainable Energy Reviews* 25, 177-196.

- Sun, D.M., Shao, W.X., and Li, J. (2009). Incremental Cost Investigation of Green Building in China. *Construction Science and Technology* 6, 34-37.
- Sunakorn, P. and Yimprayoon, C. (2011). Thermal Performance of the Bio Facade with Natural Ventilation in the Tropical Climate. *Procedia Engineering*. 21, 34-41.
- SusanSunila, S. (2010). The Relationship between Energy and Economic Growth: Empirical Evidence from 66 Countries. *Applied Energy*. 87(11), 3565-3574.
- Sweitzer, G. (1993). Three Advance Daylighting Technologies for Offices. *Energy*. 8(2), 107-114.
- Syed Husin, S.N.F. and Harith, H.Z.Y. (2012). The Performance of Daylight through Various Window for Residential Building. *Asian Journal of Environmental Behavioural Study*. 3, 85-96.
- Tan, C.H., Wong, N.H., Jusuf, S.K. (2014). Effect of Vertical Greenery on Mean Radiant Temperature in The Tropic Urban Environment. *Landscape and Urban Planning*. 127, 52-64.
- Tan, P.Y. and Sia, A. (2005). A Pilot Green Roof Research Project in Singapore. *In- Proceedings Of Third Annual Greening Rooftops For Sustainable Communities Conference, Award And Trade Show*. 4-6 May. Washington D.C.
- Tang, C.F. and Tan, E.C. (2013). Exploring the Nexus of Electricity Consumption, Economic Growth, Energy Prices and Technology Innovation in Malaysia. *Applied Energy*. 104, 297-305.
- The Appraisal Institute, (1992). *The Appraisal Of Real Estate*, The Appraisal Institute, Chicago.
- Theaker, I. and Cole, R. 2001. The Role of Local Governments in Fostering “Green” Buildings: A Case Study. *Building Research and Information* 29(5), 394–408.
- Tian, Y. and Zhao, C.Y. (2013). A Review of Solar Collectors and Thermal Energy Storage in Solar Thermal Applications. *Applied Energy*. 104 , 538-553.
- Tiwari P. and Parikh, J. (1994). Cost of CO₂ reduction in building construction. *Energy*. 20, 531-547.
- Tomalty, R., Komorowski, B. and Curb, B. (2010). The Monetary Value of the Soft Benefits of Green Roofs. *Living Architect. Monit* 12, 26-27.

- Town and Country Planning Act 1976, Act 172 (2006). Laws of Malaysia. The Commissioner Of Law Revision, Malaysia, Under The Authority Of The Revision Of Laws Act 1968.
- Treado, S., Gillette, G., Kusuda, T. (1984). Daylighting with Windows, Skylights and Clerestories. *Energy and Building*. 6, 319-330.
- Tsang, S.W. and Jim, C.Y. (2011). Theoretical Evaluation of Thermal and Energy Performance of Tropical Green Roofs. *Energy*. 36, 3590-3598.
- Tsangrassoulis, A. and Santamouris, M. (2000). A Method to Estimate the Daylight Efficiency of Round Skylights. *Energy and Buildings*. 32, 41-45.
- Turahim, A.H. and Basir, N. (2011). Green Campus Initiative: Introducing RWH System in Kolej Perindu 3 UiTM Malaysia. *3rd International Symposium & Exhibition in Sustainable Energy & Environment*, Melaka, Malaysia
- Turcotte D., Villareal J., Bermingham C. (2006). *The Benefits of Building Green: Recommendations for green programs and incentives for the City of Lowell*. UMass Lowell's Center for family, work & community.
- U.S Environment protection Agency. (2010). Retrieved November 17, 2011, available at: <http://www.epa.gov/greenbuilding/pubs/about.htm>.
- UNDP (2006). Overview of Policy Instruments for the Promotion of Renewable Energy and Energy Efficiency in Malaysia. Background Report.
- Un-Habitat Water For Asian Cities Programme, & Madhya Pradesh (India). (2010). Measures for ensuring sustainability of rainwater harvesting. New Delhi, India, Water for Asian Cities.
- United State Green Building Council (2001). Available at: <http://www.usgbc.org/leed>.
- Urban Land Institute (2005) *Green Office Buildings: A Practical Guide to Development*. Washington, D.C.
- Van Renterghem, T. and Botteldooren, D. (2011). In-Situ Measurement of Sound Propagating over Extensive Green Roofs. *Building and Environment*. 46, 729-738.
- Van Renterghem, T. and Botteldooren, D. (2014). Influence of Rainfall on the Noise Shielding by Green Roofs. *Building and Environment*. 82, 1-8.
- Van Renterghem, T. and Botteldooren, D. (2009). Reducing the Acoustical Facade Load from Road Traffic with Green Roofs. *Building and Environment* 44, 1081-1087.

- VanWoert, N.D., Rowe, D.B., Andersen, J.A., Rugh, C.I., Fernandez, R.T., Xiao, L. (2005). Green Roof Storm Water Retention: Effect of Roof Surface, Slope and Media Depth. *J Environ Qual.* 34, 1036-1044.
- Varone F. and Aebischer B. (2000). Energy efficiency: The Challenges of Policy Design. *Energy Policy* 29, 615-629.
- Viesten, K., Smyrnova, Y., Klaeboe, R., Hornikx, M., Mosslemi, M. and Kang, J. (2012). Valuation of Green Walls and Green Roofs as Soundscape Measures: Including Monetised Amenity Value Together with Noise-Attenuation Values in a Cost-Benefit Analysis of a Green Wall Affecting Courtyards. *Int. J. Environ.Res. Public Health* 9, 3771-3788.
- Vijayaraghavan, K. and Joshi, U.M. (2014). Can Green Roof Act as a Sink for Contaminants? A Methodology Study to Evaluate Runoff Quality from Green Roof. *Environment Pollution.* 194, 121-129.
- Vijayaraghavan, K. and Raja, F.D. (2014). Design and Development of Green Roof Substrate to Improved Runoff Water Quality: Plant Growth Experiments and Absorption. *Water Research.* 63, 94-101.
- Viljoen, A., Dubiel, J., Wilson, M., Fontoynt, M. (1997). Investigations for Improving the Daylighting Potential of Double Skinned Office Buildings. *Solar Energy.* 59(4-6), 179-194.
- Voivontas, D., Tsiligridis, G., Assimacopoulos, D. (1998). Solar Potential for Water Heating Explored by GIS. *Solar Energy.* 62(6), 419-427.
- Wang, L., Wong, N.H., Li, S. (2007). Façade Design Optimization for Naturally Ventilated Residential Buildings in Singapore. *Energy and Buildings.* 39, 954-961.
- Wang, P.C. (2008). Natural Ventilation for Double Skin Façade Design for Office Building in Hot and Humid Climate. *PhD Thesis.* University of South Wales, Australia.
- Wang, Y., Tian, W., Ren, J., Zhu, L., Wang, Q. (2006). Influence of a Building's Integrated-Photovoltaic on Heating and Cooling Loads. *Applied Energy* 83, 989-1003.
- Wang, Y., Zhou, S., Huo, H. (2014). Cost and CO₂ Reductions of Solar Photovoltaic Power Generation in China: Perspectives for 2020. *Renewable and Sustainable Energy Reviews.* 39, 370-380.

- Wang, Z., Yang, W., Qiu, F., Zhang, X., Zhao, X. (2015). Solar Water Heating: From Theory, Application, Marketing and Research. *Renewable and Sustainable Energy Reviews*.41, 68-84.
- Watcher, S (2004). *The Determinants of Neighbourhood Transformations in Philadelphia-Identification and Analysis: The New Kensington Pilot Study*. University of Pennsylvania, the Warton School.
- Wong, I. and Yang, H.X. (2012). Introducing Natural Lighting into the Enclosed Lift Lobbies of High Rise Buildings by Remote Source Lighting System. *Applied Energy*. 90, 225-232.
- Wong, N.H. and Li, S. (2007). A Study of the Effectiveness of Passive Climate Control in Naturally Ventilated Residential Buildings in Singapore. *Building and Environment*.42, 1395-1405.
- Wong, N.H., Cheong, D.K.W., Yan, H., Soh, J., Ong, C.L., Sia, A. (2003). The Effect of Rooftop Garden on Energy Consumption of a Commercial Building in Singapore. *Energy Built*. 35, 353-364.
- Wong, N.H., Liping, W., Chandra, A.N., Pandey, A.R., Xiaolin, W. (2005). Effects of Double Glazed Façade on Energy Consumption, Thermal Comfort and Condensation for a Typical Office Building in Singapore. *Energy and Buildings*. 37, 563-572.
- Wong, N.H., Tan, A.Y.K, Tan, P.Y., Chiang, T., Wong, N.C. (2010). Acoustics Evaluation of Vertical Greenery Systems for Building Walls. *Building and Environment*. 45, 411-420.
- Wong, N.H., Tan, A.Y.K., Chen, Y., Sekar, K., Tan, P.Y., Chan, D., Chiang, K., Wong, N.C. (2010). Thermal Evaluation of Vertical Greenery Systems for Building Walls. *Building and Environment*. 45, 663-672.
- Wong, N.H., Tan, A.Y.K., Wong, R., Tan, P.Y., Wong, N.C. (2009). Energy simulation of vertical greenery systems. *Energy and Buildings*. 41, 1401-1408.
- Wong, N.H., Tay, S.F., Wong, R., Ong, C.L., Sia, A. (2003). Life cycle cost analysis of rooftop gardens in Singapore. *Building and Environment*. 38, 499-509.
- Wyatt, P. (2009). Replacement Cost and Market Value. *Journal of Property Investment and Finance* 27(6), 593-602.

- Xu, L. and Ojima, T. (2007). Field Experiments on Natural Energy Utilization in a Residential House with a Double Skin Facade System. *Building and Environment*. 42, 2014-2023.
- Yaacob, M., Hizam, H., Radzi, M. (2014). A Comparative Study of Three Types of Grid Connected Photovoltaic Systems Based on Actual Performance. *Energy Conversion Manangement*. 78, 8-13.
- Yamane, Taro. 1967. *Statistics: An Introductory Analysis*, 2nd Ed., New York: Harper and Row.
- Yang, H., Burnett, J., Ji, J. (2000). Simple Approach to Cooling Load Components Calculation through PV Walls. *Energy and Buildings*. 31, 285-290.
- Yang, H., Zheng, G and Burnett, J. (2001). Grid-Connected Building-Integrated Photovoltaics: A Hong Kong Case Study. *ISES 2001 Solar World Congress*, 111-116.
- Yang, X. (2013). Measuring the Effect of Environmental Certification on Residential Property Values-Evidence from the Green Condominium in Portland, U.S. *Dissertation and Thesis*. Paper 1113. Portland State University.
- Yap, T., Wong, L., Yoong, Y., Tan, H., Lim, H. (2011). Supporting Structure for Green Building Facade. *WO 2011/016777 A1*.
- Yoshida, J. and Sugiura, A. (2014). The Effect of Multiple Green Factors on Condominium Prices. *J Real Estate Finance Econ* 50, 412-437.
- Yu, C., and Hien, W. (2009). Thermal Impact of Strategic Landscaping In Cities: A Review. *Advanced Built Energy Res.* 3, 237-241.
- Yu, C.W.F. and Kim, J.T. (2011). Sustainable Developments for Future Building. *Indoor Built Environ* 21 (1), 3-4.
- Yu, J., Tian, L., Xu, X., Wang, J. (2015). Evaluation on Energy and Thermal Performance for Office Building Envelope in Difference Climate Zones in China. *Energy and Building*. 86, 626-639.
- Yudelsohn, J. (2007). *Marketing Green Building Services: Strategies for Success*. Elsevier, Oxford.
- Yun, G.Y., Shin, H.Y., Kim, J.T. (2010). Monitoring and Evaluation of Light Pipe System Used in Korea. *Indoor and Built Environment*. 19(1). 129-136.
- Zain-Ahmed, A., Sopian, K., Othman, M., Sayigh, A., Surendran, P. (2002). Daylighting as a Passive Solar Design Strategy in Tropical Buildings: A Case Study of Malaysia. *Energy, Conversion, and Management*. 43, 1725-1736.

- Zhang, X. and Munner, T. (2000). Mathematical Model for the Performance of Light Pipes. *Light Res Technol.* 32(2), 141-146.
- Zimmermann M., Althaus H.J. and Haas A. (2005). Benchmarks for Sustainable Construction: A Contribution to Develop a Standard. *Energy and Buildings.* 33(11):1147-1157.
- Zuo, J. and Zhao, Z.Y. (2014). Green Building Research-Current Status and Future Agenda: A Review. *Renewable and Sustainable Energy Reviews.*30, 271-281.